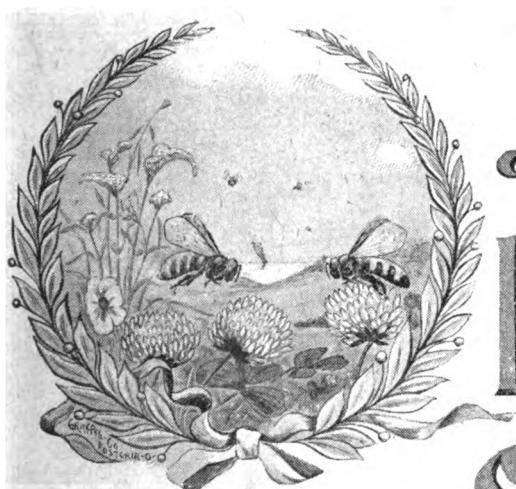


JANUARY, 1898.

28th Year.

85th Edition.



Bee Keepers' Supplies

MANUFACTURED BY

THE A.I. ROOT COMPANY
MEDINA, OHIO.
U. S. A.

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AS OTHERS SEE US.

Instead of the usual description of our growth in business and factory, which has for years appeared in this column, we have thought best to give place this year to an unsolicited letter, from one capable of judging, and one who has held a prominent place among bee keepers, as well as being a manufacturer.

THE HOME OF THE HONEY-BEES, AS SEEN BY
DR. G. L. TINKER.

Having, some time since, sold out his factory, the writer no longer manufactures apiarian supplies, and should be able to write without prejudice or selfish interest of the great work being done by The A. I. Root Co. Feeling that the readers of GLEANINGS would be interested, and that it was the duty of some one to make a note of the progress that has been made in the manufacture of apiarian supplies, I have concluded to break my long silence in the bee-papers by writing out my impressions of a recent visit to the "Home of the Honey-bees."

First, it should be stated that the manufacturing plant of this company, for some years, has been the largest of the kind in the world. The credit of building up such a great work rests with the senior of the firm, a man of much energy and executive ability. It remained, however, for the new members of the firm (Messrs. E. R. Root and J. T. Calvert) to prevail in introducing a large number of new, improved, and costly machines that a higher order of work might be turned out. In this they have been highly successful. Work is not only turned out more speedily than heretofore, but it is finished neatly and accurately. To my great delight I saw all of these beautiful machines in active operation. Every part of the bee-hive seemed to be made in duplicate, every piece being finished perfectly, resembling the finest cabinetwork. There were piles upon piles of hives and parts of hives, the elegant finish of which reminded me that the time had come when one great manufacturing company, at least, has little if any thing to attain in the way of perfect workmanship in every department of their extensive works. The vast amount of labor and expense that has been put forth to reach this much-desired goal deserves recognition by those competent to judge of it, and it is hereby freely given, and without solicitation.

The narrow section, to be used with the fence, has many things to commend it. It can always be furnished of whiter wood than a wider section; it is economical; it shows off the honey to the best advantage; it is entirely practicable, and I predict for it a popularity that no other style of section has ever reached. Indeed, it has seemed to me almost the last and best thing to be brought forth to cap the climax of effort to please the patrons of The A. I. Root Co.

The progress in the manufacture of foundation has been as great as in other lines of their work. The new drawn foundation must be classed with the extraordinary accomplishments of human genius. It has very much the appearance and about the same weight of section foundation that had been drawn out and built up by the bees until about 1/4 of an inch thick. If I hadn't seen the machine on which it is made I should have declared the feat impossible.

Now a word about the many employees. I think I never saw a more earnest and diligent lot of workers, both women and men. They seemed to work with an enthusiasm quite unlike that observed in most large factories. Mr. A. I. Root seemed to be everywhere among them, always pleasant and encouraging. I really do not know how many times he went through the factory that first day of December, but it was a good many. Through his kindness I was shown the vegetable-garden under glass. There were ripe tomatoes, and potatoes just coming up, and strawberry-plants with buds set; lettuce-plants, etc. We then went through the potato cellar, and here were hundreds of bushels of the choicest varieties. They were all large and fine, and must please all who get them for seeding purposes.

New Philadelphia, O.

[We appreciate most thoroughly the kind things the doctor has seen fit to say—first, because they were entirely unsolicited; and, second, because the goods that Dr. Tinker sent out when he was manufacturing were acknowledged wherever seen to be the finest, in the line of bee-keepers' supplies, of any thing ever turned out. Well, to have the maker of these goods pronounce so high an encomium on those of our own manufacture is most gratifying indeed.]

The doctor omitted to state that he came here to show us how to run his automatic zinc-perforating machine which we had purchased of him a few days before. To see that machine moving along like a

thing of life, working all alone by itself for a period of twenty minutes, without any one near it, is a sight worth looking at. When we first put it in, it had some "balky spells;" but now it does its work silently, minds its own business; and when it has finished its sheet of zinc it stops of its own "accord," waiting for some one to give it an ther sheet. I hardly need say the Tinker zinc has earned for itself a reputation that is world-wide.—ED.]

OUR GOODS NEAR YOUR HOME.

It is often quite expensive, in high freight charges, to send long distances for small lots of goods; and quite often, when they have to make a number of transfers from one railroad to another from one to three weeks' time is required, depending on the distance, for shipment to reach destination after being started. When goods are shipped in carload lots, much lower rates are secured, and quicker time made in transit. In view of these facts we have found it advisable, and a great convenience to our distant customers, to have our goods in stock at many business-centers throughout the country. As the needs of different localities vary somewhat, a full assortment of every thing listed in this catalog is not kept in stock, but only such as are in most demand in each locality. Except at far distant points in the West, our goods may be had at these branches at catalog prices. The branches and dealers supplied by car lots are:

The A. I. Root Co., 118 Michigan St., Chicago, Ill., G. W. York, Manager.

The A. I. Root Co., 1024 Mississippi St., St. Paul, Minn., H. G. Acklin, Manager.

The A. I. Root Co., 1635 West Genesee St., Syracuse, N. Y., F. A. Salisbury, Manager.

The A. I. Root Co., Mechanic Falls, Me., J. B. Mason, Manager.

The A. I. Root Co., 10 Vine St., Philadelphia, Pa., W. A. Selser, Manager.

M. H. Hunt, Belle Branch, Wayne Co., Mich.

Geo. E. Hilton, Fremont, Newaygo Co., Mich.

Walter S. Pouder, 512 Mass. Ave., Indianapolis, Ind.

Jos. Nysewander, 612 W. Grand Ave., Des Moines, Ia.

John Nebel & Son, High Hill, Montgomery Co., Mo.

D. M. Edwards, Uvalde, Texas.

The L. A. Watkins Mds. Co., Denver, Col.

The Abbey-Hardy Co., Grand Junction, Colo.

J. H. Back, 235 W. 3d North St., Salt Lake City, Utah.

Buell Lamberson, 1802 Front St., Portland, Oregon.

Los Angeles Hive and Box Co., Los Angeles Cal.

LOCAL DEALERS.

Besides these dealers who get carload lots we have a good many local dealers, mostly in this and near-by States. These are dealers in general merchandise, or progressive bee-keepers, or others interested in improved methods of bee-keeping, who undertake to supply the needs of bee-keepers in their locality. If there is such a dealer in your vicinity it will be to your best interests to place your order with him; but be sure to insist on having Root's goods, and do not accept inferior substitutes. Bee-keepers, as a rule, are not numerous enough to have an agent or dealer at every cross roads, as is possible with some things, nor do we intend to have more than one dealer in a place. Should it not be possible to obtain our goods from a dealer, or for any other reason you prefer to send your order direct to us, we shall be pleased to serve you.

Remember that we guarantee to furnish you bee-supplies as cheap as you can obtain equally good goods from any responsible firm, even taking the cost of transportation into the account. If our catalog prices do not compare with those you may have, give us an opportunity to figure with you before placing your order, being careful to send us a list of goods on which you desire figures.

SHIPPING FACILITIES.

Our shipping facilities are of the best, being located on the Northern Ohio Railroad, which is one of the Brice system, which aggregates several thousand miles of road; also on the Cleveland, Lorain & Wheeling, which crosses all the great east-and-west lines through Ohio. We have only the U. S. Express Co. here, but have an arrangement with them securing quite a reduction from their regular tariff rates. Information in regard to the cost of transportation to any point furnished on application.

TERMS.

Our terms are cash with order. We pay cash for material, and pay our helpers cash every week for their work; therefore we must have cash in advance for the goods furnished. Do not ask for credit. See back of order-sheet for further particulars and rules for ordering.

1898.—GREETING.

In presenting to you our Annual Catalog there are a few things to which we invite your especial attention and careful consideration.

New Features. Although we have introduced new features every season, the year 1898 will be more conspicuous in this respect than any past year. The new fence and plain section introduced by us some three or four months prior to the issuance of this catalog seem to have taken the bee-keeping world by storm. Strange as it may seem, not one among a dozen or so of bee-keepers, who have used them (when properly made) all the way from five to ten years, would use any thing else. The advantages secured from their use seem so great that we decided to make them our leaders.

Another feature is the adoption of the Danz. bottom-board with deep entrance. This, we know from our own tests, will do much to discourage clustering out and swarming during the height of the honey-flow.

Another feature is the staple-spaced frames as an option in place of the Hoffman. These frames are no experiment, and have been tested most thoroughly by practical and extensive bee-keepers in Eastern New York, and we bespeak for them a large sale in regions where propolis is bad.

Still another feature is our adoption and recommendation of the deep or tall section. Last year we put out the 4x5 rather cautiously; but the sales of it, and the demand for a smaller deep section adapted to an eight-frame super, have been of such a character that we have felt constrained to offer not only the 4x5 size, but also another one; namely, 3 $\frac{1}{2}$ x5x1 $\frac{1}{2}$. These sections are used in our Ideal super; and some of our friends who have examined the merits of this special super and section pronounce it "ideal" in every respect.

Another feature is the Tinker zinc, the reputation of which is world-wide. We have purchased machinery and dies for making this superb article, and are now prepared to furnish it at reduced prices.

Our entrance-guards and Alley traps have been greatly improved. Tinker zinc is used, and they are so constructed as to allow of the freest ventilation.

And last, but not least, are improvements in shipping-cases, with additional sizes suited to the new sections.

Prices on honey-packages, both glass and tin, have been considerably reduced from those of former years.

We are Leaders. The fact that other manufacturers copy and adopt to a large extent features that we introduce a year before, is the best evidence that we lead, and that our progress is always upward and not downward. By buying of us or our dealers you always get the very latest in bee-keeping appliances.

More Included at Our Prices. In comparing prices quoted in this catalog with others you may receive, take into consideration what you get at the prices quoted. Our hives, besides being of superior workmanship, are almost entirely free from knots. In cutting up the lumber into the many different things we make, and the various lengths required, we can, with little waste, cut out most of the knots. Long boards, as free from knots as you will find our hives to average, would be worth more money in the rough than we charge you for the hives all cut out ready to put together. Of course, you will find some coarse lumber in bottom-boards, and occasional places where it answers the purpose fully as well; but the hive-bodies and covers are practically clear lumber. The dovetailed corners are smoothly cut, and just the right depth.

We include tin rabbets with all our hives; also nails of a superior kind, and of just the right sizes, are included with every thing that requires them. Complete hives include, also, comb foundation starters for the brood-frames, as well as for surplus boxes and frames.

Experience. Having been actively engaged in caring for bees over thirty years, all the time considering suggested improvements, and having access to the opinions and experience of the best-informed bee-keepers throughout the country, we are in position to know the requirements of the trade. Having also the experience of twenty-eight years in the manufacture of bee-keepers' supplies, we have come to appreciate the necessity of close measurements and accurate workmanship in bee-hives and supplies, and have learned how to avoid many of the mistakes and miscalculations almost inevitable with amateurs and ordinary planing-mills. In very many instances we can furnish you the hive-boards and frame stuff, all ready to put together, for less than you can buy the raw lumber at the mill.

Contents of this catalog copyrighted, 1898,

Equipment. We have many expensive special machines, made for doing special lines of work most economically and accurately; and the use of these is made possible only by a large output of such goods, and you will readily see that we are in position to furnish superior goods at more reasonable prices than you can have them made for, and with the assurance that you are getting something that is sure to give satisfaction. This applies equally to the outside shell of the hive as to the inside fixtures.

Valuable Information. We call your attention to the condensed instructions in the last pages of this circular, on various important questions most common in the minds of beginners. While these are good as far as they go in the condensed space to which we are limited in this circular, we would not have you think that you can get along with these limited instructions. You can not afford to be without a good standard text-book if you would make a success with bees.

Bee-keeping as a Pursuit. We believe that, for the same amount of capital invested, and care in management, there is not another rural pursuit that will yield better average returns than bee-keeping. To be sure, there are localities and seasons when, with the best of management, the returns are small, or wanting entirely; but of what rural industry can you not say the same? The energetic, careful bee-keeper usually receives a good return for money and labor expended.

A Beginning. We can not recommend to any one without experience more than a small beginning, say from one to six colonies of bees, and the hives and implements needed at first. These, with a good book of instructions, such as the A B C of Bee Culture, will enable you to get the experience necessary to successful bee-keeping. After the first or second year, with a few bees you will be better prepared to enlarge your investment if you think best. If you should invest heavily at first, and because of inexperience or other unfavorable circumstances, should not make the success you expected to on the start, the result with most people would be that they would give it up entirely; while if you proceed carefully and with perseverance, you are bound to succeed.

Beginners' Outfit. If we should go no farther, there are a good many beginners who would not know just what, among the many things shown in this catalog, they would need to order for a beginning. There are some things that you can not well get along without; and there are others which, although not absolutely necessary at the start, are nevertheless very convenient to have, if you can afford it. Then there are other things, the need of which will manifest itself as your stock of bees and experience increases. In order to assist you to a judicious beginning, we put up an outfit consisting of the hives and implements necessary for a start of two or three colonies of bees. This consists of the following, and is styled our

Beginners' Outfit No. 1.

1 A B C of Bee Culture, cloth.....	\$1 20
1 No. 2 veil.....	50
1 Clark smoker.....	50
5 No. AD4P Dov. hives, P. W. complete in flat..	6 00

All shipped together, the price will be \$8.00. Nails for hives and foundation-starters for frames and sections, as well as full directions for putting the hives together, are always included. If you would prefer to have one hive all put together as a guide in nailing the others correctly, we will include an extra hive, all put up complete, with a full sheet of foundation in three of the frames, for \$2.00 extra, making the Outfit No. 1 complete with six hives, one of the six being put up complete, and the others in the flat, \$10.00. For those who can afford it, we would advise, in addition to the above, the following tools, which will be found very convenient if not quite indispensable:

Daisy foundation-roller.....	\$ 15
Daisy foundation-fastener.....	1 00
1 spur wire-imboder.....	15
5 lbs. medium brood foundation.....	2 40
1 qt. paint for hives.....	45
1 Alley queen-trap.....	50
1 Porter bee-escape and board complete.....	85

Total additional supplies, \$5 00

These, added to Outfit No. 1, compose our Beginners' Outfit No. 2, and cost, complete with extra hive put up, \$15.00; without extra hive, \$18.00. These goods (except the hive put up) go at third class freight, and weigh less than 200 lbs., and the freight will be from 25 cents up to 4 or 5 dollars, depending on the distance. To most points in this and nearby States the charges will be less than \$1.00 on either outfit.

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THE DOVETAILED (OR LOCK-CORNER) HIVE.

This hive was introduced in 1889, since which time it has crowded almost every thing else out of the market. Two years later we put out our improved form of Hoffman frames. They, together with the section-holders, made the hive win favor at once. We have steadily kept pace with the march of improvements; and while we have avoided radical changes, we have incorporated important improvements. For 1898 the hive is better than ever. Among other things it has the improved Danz. cover (patent applied for), Danz. bottom-board, and the improved Hoffman frames with spacers under the top-bars, and last, but not least, the new fence and plain section, each of which will be explained in detail further on. As heretofore, we shall use only a good quality of white pine lumber, practically clear of knots, in all our hives.

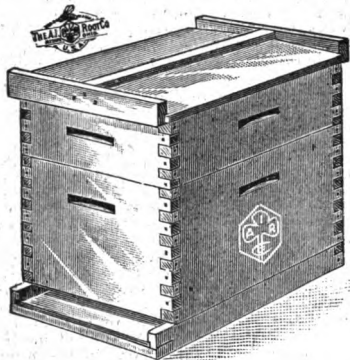
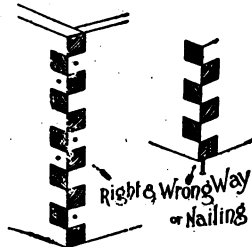


FIG. 1.

The particular feature of the hive, and hence its suggestive name, is the dovetailed—or, more properly speaking, the lock corner.

FIG. 2.



dovetailing is done on special automatic machinery that makes smooth, accurate, polished, square cuts.

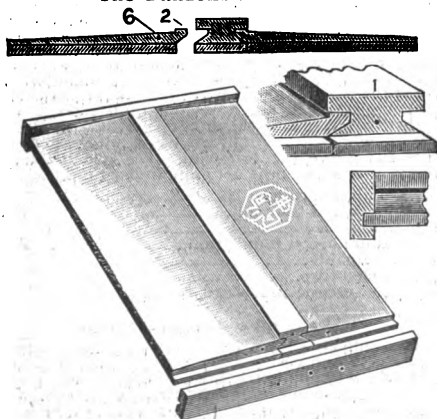
The Danzenbaker Cover.

FIG. 3.—Designated as D.

The accompanying engraving makes its manner of construction so plain that very little needs to be said. The ridge, or center piece, is made of the best quality

of 1½-inch lumber; is grooved on each side as shown, and into these grooves are fitted corresponding tongues or projections of the boards forming the gable as shown at 2 on Fig. 3. These gable boards are beveled or slabbled off so as to shed water, and the ends are rabbeted to fit in a corresponding groove of the end cleats. The under side of these same boards is grooved with saw-cuts to counteract any possible warping tendency there may be in the boards. Three nails at each end as shown are sufficient to hold the end-cleats securely in place. It is recommended that one nail be put in the end of ridge-piece and one each in each of the side-boards. The object of putting the nails close together is to allow for shrinkage and swelling of the side-boards, due to the variations in climate or weather. If a nail be driven clear out to the end of the cleat, as soon as the board begins to shrink a little it will be likely to cause a check, or split.

In fitting the pieces together we recommend that the projection at 2, Fig. 3, its corresponding groove in the ridge-piece, and the rabbet at the ends of the pieces, be painted with white lead.

The Root Ventilated-gable Cover.

FIG. 4.—Designated as G.

For hot climates or elsewhere, where shade from trees or vines is not available, we have constructed a double-gable cover. It renders unnecessary the shade-board and 20-lb. stone. The under side of the cover is flat, and made of ½-inch stuff let into grooves in the end-cleats. The cover boards are of ¾-inch stuff, and at the lowest point are ¼ inch from the lower boards, and at the highest point two inches. A piece is inserted half way between the two gable ends, to which both upper and lower boards are nailed. This makes the cover very strong, and prevents the under boards from warping. This long open space at the sides, together with the holes at the gables, gives ample chance for the air to circulate over the inner cover but not into the hive.

We can furnish any of the Dovetailed-hive combinations with the gable cover, instead of the Danz. cover, at the same price. In ordering, simply use the letter G, instead of D, in the number of the hive if gable cover is wanted.

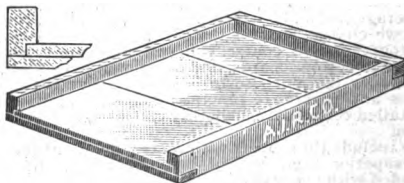
Danzenbaker Bottom-board.

FIG. 5.—Designated as A.

The reversible Danz. bottom-board which we furnished last year as an option proved so satisfactory in every case that we decided this year to make it a part of our regular hive equipment. The floor-boards are made of ¾-inch lumber, and are let into grooves in the side-rails. It is so constructed that it may be used either side up. One way it gives an entrance ¾ inch deep, and the width of the inside of the hive, and the other way ¼ inch deep. The shallow side may be used during the robbing season, or at other times when it is desirable to have a contracted entrance. During hot weather, or during the honey-flow, the deep side should be used. The old style ¾-inch entrance, failing to give sufficient ventilation to the hive, induced clustering out, and loafing during the height of the honey-flow, resulting in unnecessary swarming just when it can be least afforded. We have proved to our satisfaction that a large percentage of swarming may be prevented by a large open entrance; and if

swarming can be kept down to a great extent by so simple a plan it means *more money and more money*.

The deep entrance is invaluable for cellar wintering. It is not necessary to remove the bottom-boards, as the deep-space under the frames affords ample ventilation.

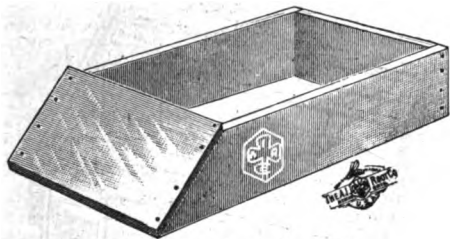


FIG. 6.—Designated as H.

Hives should never, under any circumstances, be set directly on the ground. The dampness, besides being detrimental to the bees, rots out the bottom-boards. Some use bricks, pieces of scantling, old boards, and what not, but with any of these it is difficult to properly level up the hive, and moreover, they require back-aching work to get at the frames. By far the best arrangement is something like that shown above. It is made of 6-inch cheap lumber, wide enough to bring the hive up to convenient working distance, and the slanting front not only keeps weeds and grass down immediately in front of the entrance, but affords an excellent alighting-board.

Dimensions and Hive-rabbit.

The hive-body consists of a plain box of $\frac{3}{4}$ -inch pine lumber, planed both sides, $13\frac{3}{4} \times 20$ inches outside measure, and $9\frac{1}{2}$ inches deep, with hand-holes in each side and end. The top inside edge of the ends is rabbetted $\frac{1}{8}$ inch by $\frac{1}{4}$ inch deep. In this rabbet is nailed our improved tin rabbet, as shown at 6 in Fig. 24.

Frames.

There are in the standard Dovetailed hive eight of the Hoffman self-spacing frames. See following pages for fuller description of these frames, as well as other styles, any of which we can furnish when desired, but we use and recommend the Hoffman, and send these when no others are specified.

The Fence and Plain Section.

During the fall of 1897 we introduced to the bee-keeping world through our journal, GLEANINGS IN BEE CULTURE, the cleated separator and the no-bee-

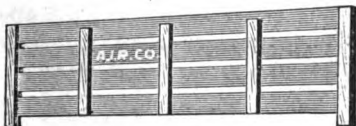


FIG. 6 1/2.

way section—that is, sections without insets, having sides, top, and bottom plain, and all of the same width throughout. For convenience we shall call the first

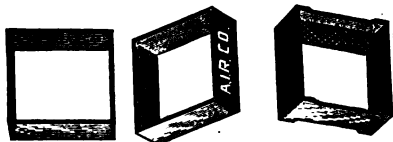


FIG. 7.

named the fence, which it greatly resembles, and the other the "plain" section, because the edges are straight and plain all around. It will be apparent that, if there are no bee ways or openings in the sections, the separators must be so constructed as to provide for the necessary bee-space; and this is best accomplished by nailing (or, better, gluing) cleats transversely, and at intervals equal to the width of the section, across the separator; and, for reasons that we shall presently enumerate, the other parts should be made up of a series of slats rather than one wide thin piece of veneer.

All of this may seem like quite an innovation, and that something so new should be tried before it is foisted upon the public. The fact remains, however, that the fence and plain section are neither new

nor untried. They have been used quite extensively for a period of eight or ten years, in a quiet way, by prominent bee-keepers all over the land, who, realizing that such sections, when filled with honey, looked plumper and nicer, scraped easier, brought a higher price, and took fewer shipping-cases to case it, naturally enough were in no hurry to invite competition by telling the world about them. And right here we will take each one of these points seriatim:

1. These fences are made entirely of scrap, and, consequently, will cost but little more than the old-style separator, which, after being used a year or so, had to be discarded. As they will be glued together at the factory by automatic machinery, the bee-keepers will not be bothered to put them together. Those who have used this glued fence say it is good for years. They are, therefore, cheaper when viewed in this light than the old separators.

2. Prettier and better filled comb honey can be secured with a fence, for the reason that the bees can crawl all through the slats, affording them easy and direct passageways from one honey-box to another. *One great objection to the old-style super with its separators is that it shut off each section box into a compartment or room by itself; and, as every one knows, it was much harder to get bees to enter comb-honey supers than supers of the extracting sort.*

3. The peculiar construction of the fence will, we believe, largely do away with the passage-holes in the corners of the ordinary section honey-boxes.

4. The fact that the fence is made up of several different slats, bound by transverse strips on each side, and grooved cleats on each end, has a tendency to very materially stiffen and strengthen the section-holder. In case of the old-style super, the bottom-bar of the section-holder would sometimes sag; but the new fence is so much stiffer than the separator that we believe it will do away largely with the sagging of the bottom-bars.

5. The new section, when filled with honey, will bring a higher price, because they appear to be and in fact are better filled out, and the surfaces of the combs themselves are more even—at least this seems to be the experience of those who have used such sections with a cleated separator or fence.

6. Facility in scraping these sections with their plain straight edges is quite an important feature. It is not an easy matter to clean out the insets of the ordinary old-style sections, and practically impossible to remove the *stain*. A caseknife or a piece of steel having sharp square edges will, with one sweep, clean almost the whole four edges of the new section at once.

7. The new section and fence greatly simplify the construction of the section-holder. The bottom instead of being scored out to correspond with the openings in the bottoms of the sections, is one straight piece, and of the same width as the section itself. The end-bars are also of equal width with the bottom-bar.

8. The new section is only $1\frac{1}{4}$ inches wide, and yet will hold as much honey as the old $1\frac{1}{2}$ inch section with its openings when used with plain separators; and consequently the ordinary shipping-case will hold from 15 to 25 per cent more honey, thus effecting a substantial saving in cases to the bee-keeper.

Dovetailed Super with Plain Section and Fence.

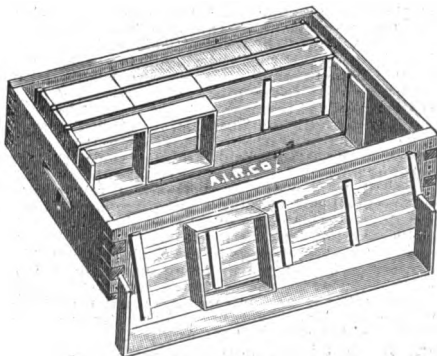


FIG. 8 1/2.—Designated as P.

This is the same super we have sold for years, only it is adapted to receive the new fences and plain sections. These latter are $\frac{3}{4}$ inches square and $1\frac{1}{4}$ wide, and this width will hold just as much honey exactly as the old two-bee way section $1\frac{1}{2}$ inch.

The fence is made up of four horizontal slats $\frac{3}{4}$ inch

wide, $\frac{1}{2}$ of an inch thick, and long enough to reach into grooves in the end cleats. Six cleats $\frac{1}{2}$ of an inch thick, and $\frac{1}{2}$ inch wide, including the end cleats, are glued on at our factory by automatic machinery much more cheaply and accurately than it can be done by hand. The cleats, it will be observed, do not reach quite to the top of the fence. The object of dropping them down thus is to give the bees passageways around the corners of the sections, thus doing away, to a considerable extent, with holes in the corners of the sections.

The section-holders are the same width as the sections ($1\frac{1}{2}$ inches), and, like them, have no bee-ways or awkward scorings in the bottom-bars. The ends are only $\frac{1}{4}$ inch thick (instead of $\frac{1}{2}$, as were the old ones), leaving a bee-space between them and the end of the super. To prevent end play a wedge-shaped strip at the bottom secures the holders to the proper position.

Instead of making use of a follower we use a fence on each outside row of sections, thus in a measure carrying out the Pettit system of producing comb honey, the special feature of which consists in having the outside rows of sections as well filled out as those in the center. When the last fence is in, the whole is wedged up with a thin wide strip.

The Fence and Section for the Old-style Super.

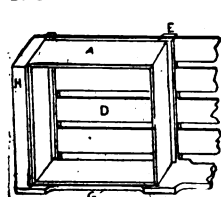


FIG. 7 $\frac{1}{2}$.

There are many who, having purchased our supers of older pattern, desire to use the fence and plain section, and thus keep up with the times. Sections they would have to buy, as a matter of course, so that all the expense will be for fences enough to supply supers they desire to so equip. The fence for this purpose differs a little in construction from that shown in the super in Fig. 8 $\frac{1}{2}$, but only in the form of the end cleats. Instead of being grooved to receive the ends of the slats, as in the other, they are plain, and the same as the middle cleats, only a little narrower and longer. As the section-holder of the old-style super is $1\frac{1}{2}$ inches wide, the plain section with the cleats of the fence, one on each side, just nicely fills up the space; and, as the horizontal slats project beyond the end cleats, these projecting ends fill up the space between the section-holder ends the same as the old plain separators did. This fence is designated as the S fence.

Tall Sections for Eight-frame Supers.

Within the last year or so tall sections, taller than broad, have been growing more and more into favor, and it is argued that they look more symmetrical, since in appearance they are more in harmony with surrounding objects with which we are familiar (such as doors and windows, for instance), and to which our tastes have been educated by long association. Again, it is argued that the tall box of honey standing right beside a square one of the same superficial surface and weight appears to be larger. Whether these advantages are apparent or real, it is certainly true that, in some markets at least (not all), notably in the East, the tall sections sell more readily, and bring a higher price. In recognition of this fact some bee-keepers actually opposed to them have been forced to adopt them after they saw that the oblong boxes would out-sell their square ones on the same counter. It is equally true that, for a given hive surface (that is, over the top of the frames), more of the tall boxes can be accommodated. For instance, our eight-frame hive will take on top 30 of our $3\frac{3}{4} \times 5 \times 1\frac{1}{2}$, as against 24 of the regular $4\frac{1}{2} \times 4\frac{1}{2} \times 1\frac{1}{2}$, and holding exactly the same amount of honey. Of course, a deeper super would be required to take a deeper section, but fewer supers would be needed to produce a given amount of honey.

If a deep section, then what size shall it be? The 4×5 seven-to-the-foot is a nice size, but it can not be used to the best advantage in the eight-frame width of super, which comes nearer being standard than any thing else. Our $3\frac{3}{4} \times 5 \times 1\frac{1}{2}$ holds exactly the same amount of honey as our regular $4\frac{1}{2}$ when used with the fence; and, moreover, five of them in a row just exactly fill out the length of the super.

Ideal Super with Tall Sections. ($3\frac{3}{4} \times 5 \times 1\frac{1}{2}$).

This super is equipped with fences and plain sections, the same as our other up-to-date supers; but the sections are $3\frac{3}{4} \times 5 \times 1\frac{1}{2}$, and the super is $5\frac{1}{2}$ in. deep, or enough to accommodate the five-inch depth of sections. The sections themselves are supported on plain slats $\frac{1}{2}$ in. thick, and the same width as the sections—the slats resting on a tin strip nailed on the

bottom inside edge of the ends of the super. The fences are supported in the same manner; and as they rest between the slats on this tin support, the bottom of the sections and the slats will always exactly match; i. e., be in exact alignment—a matter of no

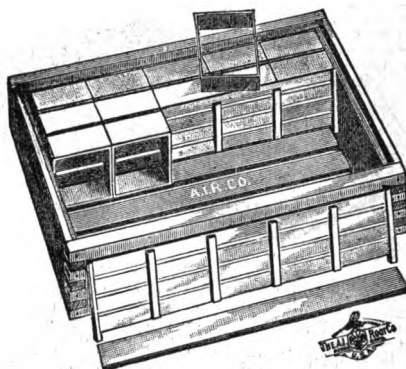


FIG. 9 $\frac{1}{2}$.—Designated as I.

slight importance. Five sections are supported on each slat—the five just exactly taking up the entire length of the super; and six slats, each with its five sections, or 30 in all, with the seven fences, fill up the super. It will be noted in this connection that these slats, unlike section-holders which are used in the other super, have no uprights at the ends. While they are a convenience in shifting the several rows of sections, they are not essential, and are omitted, as they can not be used in this super.

The style of this super is no experiment. Something very similar to it has been used for years by that practical bee-keeper Miles Morton, Groton, N. Y., after whom we have copied much.

N. B.—The $4 \times 5 \times 1\frac{1}{2}$ plain sections may also be used in the eight-frame deep super, but the supporting slats, as well as the sections, will have to run crosswise of the super—an arrangement we can not recommend. We can so arrange our eight-frame $5\frac{1}{2}$ -inch-deep super for these sections, when so ordered, without extra charge. Designated as L.

Supporting-rack for Tall Sections.

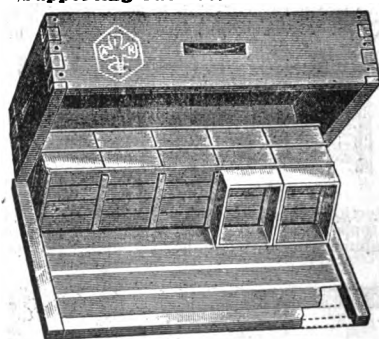


FIG. 10 $\frac{1}{2}$.—Designated as RI.

Some (and perhaps many) of our old customers will wish to test the tall section in their markets at as little expense as possible. For such we have arranged a rim to go on the bottom of their regular eight-frame dovetailed super. This rim is made of stuff $\frac{1}{2}$ inch square, and on the two ends, on the bottom inside edge, are nailed strips of tin to support the slats which are furnished with the rim. With this arrangement and fences one can use our $3\frac{3}{4} \times 5 \times 1\frac{1}{2}$ -inch sections in his regular super on exactly the same plan as is described under Fig. 9 $\frac{1}{2}$. Indeed, in connection with the fence it makes a super, to all intents and purposes, that is identically the same as our Ideal super, and can be used in exactly the same way. If the five-inch-deep sections take well in the local market, the rim may be nailed on to the bottom permanently.

This same supporting rack may be made to take the $4 \times 5 \times 1\frac{1}{2}$ plain sections, but the sections and slats will have to run crosswise of the frame, and will be designated as RL.

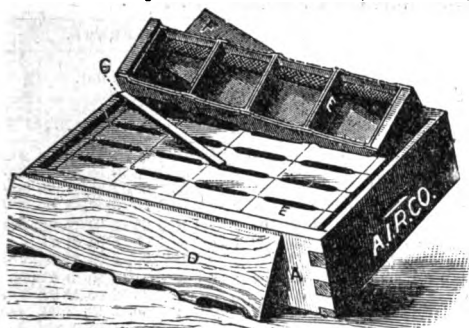
Dovetailed Super with Slotted Section-holders.

FIG. 8.—Designated as S.

We can still supply the old-style super with sawed slotted separators and slotted section-holders designated as S in the hive number.

Dadant Shallow Extracting-super.

In raising comb honey it is generally considered best to give the bees only as much room as they can occupy at once, usually one super. Considerable heat is required in comb-building, and the work of the hive; and if given only the amount of room they can easily occupy they will work with better effect than if given twice as much room as they need. The same argument will apply in securing extracted honey; but as the full-sized frames are generally used for this purpose, it was not so easy to contract the amount of space to the capacity of an ordinary super. For weak colonies, also, the shallow frame is much the better. For this reason there is a demand for shallow extracting-supers. To meet this demand we are making extracting-frames $5\frac{1}{4}$ inches deep, outside measure, like the full-depth Hoffman frames, without a comb-guide, and giving nearly 8 inches in depth, of comb surface. By putting eight of either in a super (the super used to hold 4x5 sections) without follower, and spaced $1\frac{1}{4}$ inches from center to center, you will have an extracting-super. There will be more frames to handle; but the uncapping-knife will easily reach clear across the frame, and the cappings can be pared off very rapidly. We offer these hives in table on next page as No. AD68 or AD69.

There may be another class who may wish to use these extracting-supers as brood-chambers. A hive so made up with the regular cover and bottom would be designated AD688, the price of which can easily be found in the table on next page.

Dovetailed T Super with T Tins.

For those who prefer the T super we will furnish either the regular super with $4\frac{1}{2}$ -inch 7-to-foot sections, or the Dovetailed T super made especially for $4\frac{1}{2}$ sections, and to fit the regular Dovetailed hive, at the same prices as other Dovetailed comb-honey hives complete, and empty, nailed, or in flat.

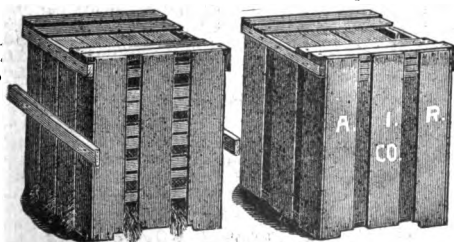
Dovetailed Hive Crated for Shipment.

FIG. 9.

With a view of making our hive still more popular we put it up in a crate that can be used for cases of comb honey. The crate on the right contains five Dovetailed hives in the flat, complete with inside furniture. The same crate is just large enough after the five hives are removed to receive the honey crop or a part of it from the five hives; that is to say, the same crate in which the five hives are shipped will hold eight 12-inch four-row cases filled with comb honey, as shown in cut on the left. It thus answers a double purpose. This hive crate is, in fact, our comb-honey crate, as shown elsewhere in the catalog.

Descriptive List of Dovetailed Hives.

The bottoms and covers of various styles are designated by a letter; i. e., A indicates the Danz. bottom, Fig. 5; B is the old-style $\frac{1}{2}$ -inch bottom; C is the bevel flat cover; D is the Danz. cover, Fig. 3; F, the flat cover; G, the gable cover, Fig. 4. The furnished bodies and supers are designated by a figure to distinguish the various styles of furnishing; 5 indicates a body with frames and division-board; 6, the same with foundation-starters added; 1 indicates the super with section-holders and followers; 2 indicates the same with separators or fences added; 3, the same as 2 with sections added; 4, the super complete with starters; 8 indicates a $5\frac{1}{2}$ -inch super, with extracting-frames and followers; 9 indicates the same with starters added.

All the different supers described on the previous pages are furnished in the various ways indicated above. To designate which style of super you want, use the designating letter following the figure which indicates the amount of furnishing desired. For instance, the regular super with fences and plain section-holders for $4\frac{1}{2} \times 4\frac{1}{2} \times 1\frac{1}{2}$ plain sections is designated by the letter P. Without the sections or starters it is 2P; with sections, 3P; with sections and starters, 4P. The same super with the slotted section-holders and sawed slotted separators, such as we have been furnishing for years, is designated by the letter S; and in like manner this super will be 2S, 3S, or 4S, according to the furnishings you wish to have included. The ideal super $5\frac{1}{2}$ inches deep, which takes five $8\frac{3}{4} \times 5\frac{1}{2} \times 1\frac{1}{2}$ sections in a row on a straight slat, is designated I, following the number. This super with slats and fences will be 2I; with sections added, 3I; with foundation-starters also included, 4I. You can have your choice of these supers on your comb-honey hives at the same price, but do not order more than one style in the same package of five hives unless you allow the single-five price to pay for the extra trouble in packing. If you do not designate which style you want by affixing the designating letter to the hive number when you order, we will use our own judgment in what we send you, and will not be responsible if we don't happen to guess which style you intended to order.

By putting together the letters and figures indicating the parts you desire in a hive, and adding together the price opposite each part as given in the following table, you can make up any combination you desire. We list under their numbers made up in this way only a few of the regular combinations kept in stock. If you want frames pierced and wire included, add letters PW to number, and ten cents for each five hives, to cover expense.

The hive-stand shown in Fig. 6 will be included with any of the hives listed in the following table for five cents each extra. If wanted, add the letter H to the hive number and five cents each hive to the price. The regular cover and bottom included are the Danz., designated AD. If you prefer any other style, substitute the letter which stands for the one wanted.

No. AD5 is a one-story hive consisting of bottom, cover, and body, with frames and division-board.

No. AD52P, S, or I, as shown, Fig. 12, is a $1\frac{1}{2}$ story hive for comb honey complete except sections and foundation-starters; nails and separators included.

No. AD64P, S, or I is a $1\frac{1}{2}$ -story hive complete for comb honey, with sections, foundation-starters, and nails.

No. AD522P, S, or I is a two-story hive for comb honey, Fig. 13, complete except sections and foundation-starters.

No. AD644P, S, or I is a two-story hive complete for comb honey. These hives are made by adding an extra super to the $1\frac{1}{2}$ -story hive shown, Fig. 12.

No. AD55 is a two-story hive for extracting with Hoffman frames and no foundation-starters.

No. AD66 is the same with foundation-starters for the frames added.

No. AD58 is a $1\frac{1}{2}$ -story hive for extracting, with $5\frac{1}{2}$ inch supers, with frames and followers.

No. AD69 is the same with foundation-starters for the frames above and below.

See next page for prices of hives and parts of hives.

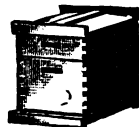


FIG. 12.



FIG. 13.



FIG. 14.

Table of Prices of Dovetailed-hive Parts and Complete Hives.

See previous pages for explanation of designating letters and figures. For R1 or R1, equipment, deduct 10c each from price of 2, 3, or 4 super. Nails included with all hives and parts. Hives are listed both eight and 10 frame size. In ordering, indicate the size thus: AD52P/8 for eight-frame, and AD52P/10 for ten-frame.

See previous pages for explanation of designating letters and figures. For RI or RI ₁ equipment, deduct 10c each from price of 2, 3, or 4 super.	EIGHT FRAME.						TEN FRAME.					
	Nailed & painted.	KD in flat.				Weight of 10.	Nailed & painted.	KD in flat.				Weight of 10.
		1	5	10	20			1	5	10	20	
Nails included with all hives and parts.												
Hives are listed both eight and 10 frame size. In ordering, indicate the size thus: AD52P/8 for eight-frame, and AD52P/10 for ten-frame.												
AD5 hive.....	1 00	80	3 75	6 50	12 20	240	1 20	90	4 25	7 50	14 00	260
AD52P, S, or I hive.....	1 40	1 10	5 00	9 00	17 00	300	1 65	1 25	5 75	10 50	19 00	330
AD64P, S, or I hive.....	1 70	1 30	6 00	11 00	21 20	320	1 95	1 55	7 00	12 50	24 00	360
AD522P, S, or I hive.....	1 80	1 40	6 25	11 50	21 80	360	2 10	1 60	7 25	13 50	25 20	400
AD644P, S, or I hive.....	2 30	1 75	8 00	14 80	28 00	400	2 60	2 10	9 25	17 00	32 40	440
AD55 hive.....	1 65	1 35	6 25	10 50	20 00	360	1 95	2 50	7 00	12 00	23 00	400
AD66 hive.....	1 80	1 45	6 75	12 00	23 00	360	2 15	1 70	8 00	13 50	26 00	400
AD58 hive.....	1 40	1 10	5 00	9 00	17 00	300	1 65	1 25	5 75	10 50	19 00	330
AD69 hive.....	1 60	1 25	6 00	10 20	19 40	300	1 85	1 45	6 75	12 00	22 60	330
A or B bottom or floor.....	15	10	50	90	1 60	45	20	12	60	1 10	2 00	50
C, D, F, or G cover.....	20	15	75	1 40	2 60	45	25	18	90	1 60	3 00	50
Empty body with tin rabbets (9½ in. deep).....	40	30	1 25	2 10	4 00	80	45	35	1 50	2 50	4 60	90
5 body with frames and division-board.....	65	55	2 50	4 20	8 00	120	75	60	2 75	4 80	9 00	130
6 body with frames and foundation-starters.....	75	60	2 75	4 90	9 40	125	85	70	3 25	5 60	10 60	135
Shallow super with flat tins (¾ in. deep).....	25	15	60	1 10	2 00	40	30	18	75	1 25	2 40	45
1 super with section-holders.....	35	25	1 10	2 20	4 20	60	40	30	1 30	2 50	5 00	70
2P, S, or I super complete except sections and starters.....	40	30	1 25	2 50	4 80	60	45	35	1 50	3 00	5 60	70
3P, S, or I super complete except starters.....	50	40	1 75	3 30	6 20	75	55	45	2 00	3 80	7 20	85
4P, S, or I super complete.....	60	45	2 00	3 80	7 40	75	65	55	2 25	4 50	8 40	85
Deep supers with flat tins (5¾ in. deep).....	25	18	75	1 40	2 40	50	30	20	90	1 60	3 00	55
8 super with frames (5¾) and follower.....	40	30	1 25	2 50	4 80	70	45	35	1 50	3 00	5 60	75
9 super with frames (5¾) and starters.....	50	40	1 60	3 00	5 80	75	55	45	2 00	3 70	7 00	80

Danzenbaker Hive.



FIG. 11.

The Danzenbaker hive has been slowly creeping into prominence of late so much that we have decided to list it with our other hives. Among other features it has reversible closed-end frames; a special frame-sup-

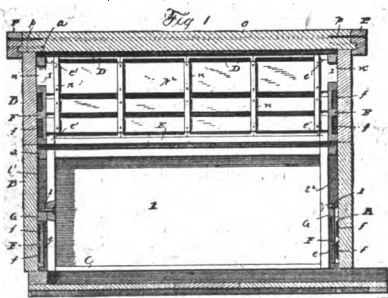


FIG. 15.

port; new and improved hive construction in hive-covers and bottom; plain sections (4x5) and fences; M or N, double or single cleated, comb-honey super. All of these and more are protected by patents granted to Mr. Francis Danzenbaker, from whom we have obtained the exclusive right to manufacture.

The hive contains ten closed-end frames, 17x7½ inches outside measure, and these are supported by a pivot I (iron rivet), Fig. 15, passing through the center of the end-bar. The projecting point of the pivot rests on the horizontal wood support at G. The frame can

then be used either side up at will. Section-holders for Danz. sections (4x5), are supported the same as the frames.

For further particulars ask for Danzenbaker's book, Facts about Bees, that will be sent for a 2-cent stamp.

Price List of Danz. Hives and Parts.

Danz. hive parts are designated in the same manner as the Dov. parts, with the prefix D. or Danz.; D6 indicates the body with furnishings and 1 foundation-starters; D5 is the same without the starters; D4 indicates the super complete; D3, the same without foundation-starters; D2, the same without sections and starters. M designates plain sections 1½, with double-cleated separators; D2, the same without sections and starters. N the sections open one side 1½ wide, with single-cleated separators. The D. or Danz. 64M hive then would be a hive complete with starters, plain sections 1½, and double-cleated fences.

NAME AND DESCRIPTION.	Nailed	KD in flat.				Wt. 10
		1	5	10	20	
Danz. 64M hive.....	2 25	1 75	7 50	18 75	26 00	340
Danz. 53M hive.....	1 05	1 00	6 10	12 75	24 00	340
Danz. 52M hive.....	1 75	1 45	6 30	11 75	22 00	310
D. 5 body with frames.....	65	50	2 40	4 50	8 50	120
D. 6 body with starters.....	80	60	2 75	5 00	9 50	125
D. 2M super with sept'rs.....	65	50	2 40	4 50	8 50	100
D. 3M super with sections.....	85	65	3 00	5 50	10 50	120
D. 4M super with starters.....	1 10	70	3 20	6 00	11 50	115

	In flat, per 100,	per 1000.
Danz. closed-end frames, 7½x17.....	\$1.50	\$13.00
Danz. section-holders, 5½x17.....	1.50	13.00
M or N fences, double or single cleated.....	1.50	13.00
Sawed wood separators, 4½x17.....	.60	5.00

Paint for Hives.



FIG. 17.

Price, gal., \$1.50; half-gal., 80c; qt., 45c; pt., 25c.

We are having put up for us a specially prepared paint for bee-hives, already mixed. It is composed of pure white lead and zinc mixed with pure linseed oil, and it will outlast any ordinary white mixture that you can get, besides being quite reasonable in price. We have it put up in pints, quarts, half-gallons, and gallons, in tin, already mixed for use. A gallon will cover about 300 feet of surface two coats, so that you need a gallon for 20 No. 1 Dovetailed hives.

Dovetailed Winter Case.

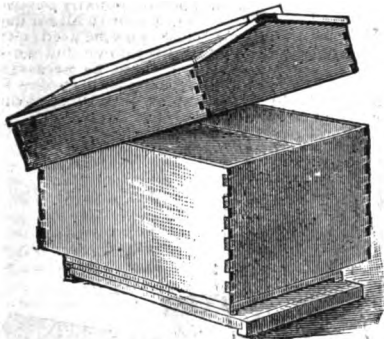


FIG. 16.

There are those who, having single-walled hives, desire something which, at a slight additional expense, will convert their hives into double-walled abodes for bees during the winter. Again, there are others who winter indoors who wish something cheap and serviceable in the way of a protection to put over the hives after they are set out in the spring, and here it is. To supply such we are prepared to furnish an outside case having the same cover and the same outside shell as go with the chaff hive described below. These are set over the eight-frame hive, and the opening at the bottom of the case (that is, the space between the hive inside and the case) is stopped up with padded sticks. Packing material is poured in the space, after which a cushion or tray is put on top of the frames, and the cover set over the whole.

These are large enough to go over ten-frame Dovetailed and Simplicity hives, allowing only $\frac{3}{4}$ inch space on each side.

Prices: Complete, nailed and painted, 80c; in flat, 60c each; \$2.85 for 5; \$5.50 for 10; \$10.20 for 20.

Dovetailed Chaff Hive.

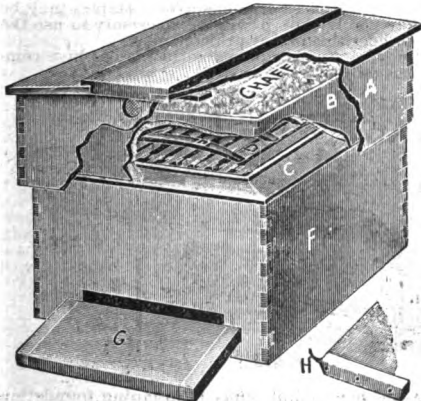


FIG. 18.

The time was when two-story chaff hives were the only kind in existence. Besides being heavy, awkward to work over, and unhandy to get at the lower story without removing the contents of the upper one, they were expensive. Neither was it necessary to have the upper story double-walled and packed when the bees could occupy only the lower story. A number of years ago we introduced our one-story chaff, so constructed as to take all the furniture and upper story of the single-walled hive. Since the introduction of the Dovetailed hive and furniture, the hive was changed so as to suit the new fixtures. The expensive and heavy corner posts were discarded for the very neat dovetail or lock corner, which makes both a lighter and stronger hive. It will take for an upper story any of the eight-frame Dovetailed hives, covers, and inside furniture; in fact it may be used in every way the same as a single-walled hive, with the very important advantage of not having to be carried in and out of the cellar, and is at all times, with a few minutes' preparation, ready for winter.

The space between the walls is two inches. There is also a double bottom and tarred paper to prevent rotting. The hive weighs only a few pounds more than the single-walled hive with bottom-board. Its inside dimensions are the same as the Dovetailed hive, and its outside dimensions are $17\frac{1}{4} \times 23\frac{3}{4}$. It can be loaded into a wagon with almost as much economy of space as the single-walled hive.

The cover is seven inches deep, and telescopes over the water-table. This effectually prevents rain from beating in, as we found was apt to be the case with the old cover resting on the water-table. The ridge piece is made of $\frac{3}{4}$ -inch stuff, and rabbeted on the side to receive the roof-boards. To further stiffen and strengthen it, a couple of cleats are nailed across the top on the inside. This new cover is also deep enough to still telescope over the hive with a regular super on top; and in the production of comb honey it affords a very important protection; but if two supers are on, it will still act as an excellent umbrella shade-board, as in Fig. 21 following. We also make one extra deep (11-in.) coming down to the dotted line with 2 supers.

Instead of a large cushion (which can not be properly placed after the cover is on) we recommend and use a tray five inches deep and of a size to slip freely under the cover. To the bottom of this tray is tacked burlap, baggy enough so as to allow the Hill device to be set under. The method of packing is this: The tray is filled full of chaff, planer-shavings, or leaves. The Hill device is set on the frames under this tray of packing, and then the cover telescopes over the whole. This tray is furnished with all 1888 hives.

We have still further improved this hive by making the entrance $\frac{3}{4}$ inch deep instead of $\frac{1}{2}$, and adding a wide detachable alighting-board as shown in Fig. 18. In the natural position this board slants down; but when an Alley trap or entrance-guard is used it may be propped up at right angles to the front of the hive.

Descriptive List of Dovetailed Chaff Hives.

These hives take the same supers and upper stories that are used on the regular Dovetailed hives, and are therefore furnished in all the same combinations. The covers and body, being different, will be designated by a different letter and number, and you can make up the hive you want in the same way by adding together the price of the various parts wanted, forming the number of hives wanted by the designating letters and figures. The telescope cover is indicated by letter Y; the extra deep cover by X; the chaff-tray and super-cover are always included unless otherwise ordered; the chaff hive with bottom, W. The same with frames and division-board, W5; with starters also added, W8.

No. YW52P, S, or I is a 1 $\frac{1}{2}$ -story hive complete without sections and starters—No. YW64P, S, or I have a 1 $\frac{1}{2}$ -story hive complete for comb honey; with section-holder arrangement, and a chaff-tray for use in winter. Other combinations made in the same way.

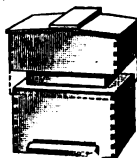


FIG. 21.

Price List of Dovetailed Chaff Hives and Parts.

Designating letter or figure. For explanation, see above.	Nailed and painted	Eight-frame.				10-frame.
		1	5	10	20	
YW5 hive.....	2.00	1.55	7.25	13.50	26.00	360
YW52P, S, or I hive.....	2.40	1.85	8.50	16.00	30.00	420
YW64P, S, or I hive.....	2.70	2.05	9.50	18.00	34.00	440
Y telescope cover, 7-inch.....	.40	.30	1.45	2.80	5.20	90
X deep teles. cover, 11-inch.....	.50	.40	1.85	3.60	7.00	110
Chaff-tray.....	.10	.10	.40	.75	1.40	30
Super-cover.....	.10	.10	.40	.75	1.40	10
W chaff-hive body.....	1.10	.80	3.75	8.10	13.40	200
W5 chaff-hive body with frs 1.40	1.05	5.00	9.20	17.20	330	
W6 same with frs. & starters 1.50	1.10	5.25	9.90	19.00	325	
Z winter-case body.....	.40	.30	1.40	2.70	5.00	70
YZ winter-case complete.....	.80	.60	2.85	5.50	10.20	160

Hives without chaff-tray furnished at 10c each less. For 10-frame hive, add to price of 8-frame the same difference in price shown in table on previous page between 8 and 10 frame dovetailed hives and parts.

Tin Rabbits for Hives.

These are of folded tin, and are used for frames to rest on, as in Fig. 24, page 10, at No. 6. The price will be as follows:

Rabbits for Dov. hive, 12 and 14 in., \$1.00 per 100. Same style rabbits will fit Simplicity and other similar hives of same style.

Rabbits of other lengths will be 1 cent per foot. Rabbits are included with all hives.

BROOD-FRAMES.

A few years ago the loose unspaced frame or the old-style Langstroth (similar to our all-wood) was the only one that was used to any considerable extent; but in later years bee-keepers have discovered that the self-spacing type of frame was superior for many reasons, chief among which may be named the following: First, labor is very greatly economized. The frames can be handled in groups of three or four; and, when set down in the hive, can be shoved up together at one operation without the necessity of fingering over each frame to get it spaced exactly the right distance from the others. Second, beginners and careless bee-keepers of extended experience do not make bungling work in spacing. There is no guessing or haphazard spacing; and the consequence is, the combs are even in surface and uniform in thickness. Third, the spacing feature of the frames, of whatever sort they may be, holds the frames securely in position, and at equal distances apart. This is of great importance in the moving of bees.

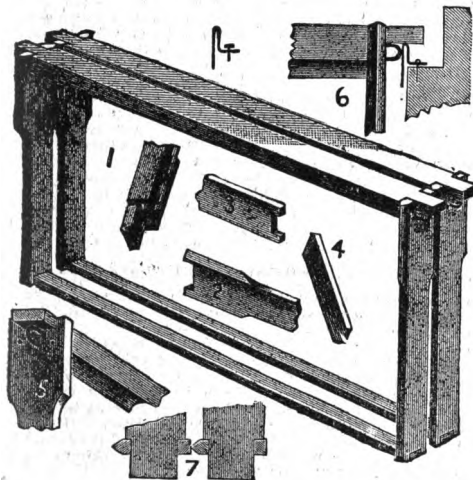


FIG. 24.—Hoffman Frame.

We have made this frame our leader for years, as it seems to combine best all the important features of a self-spacer. The end-bars, left wide at the top, and touching about $2\frac{1}{2}$ inches, form the self-spacing feature of the frames. One side of the end-bar is brought to a blunt V edge, and the other is made square. The two edges come together as shown at 7, in Fig. 24; and the object of this angular contact is to reduce propolis sticking, and also to a great extent bee-killing, even when the frames are carelessly handled.

The Hoffmans are supplied with thick and wide top-bars of a kind that practically does away with the burr-comb nuisance, thus rendering it possible to lift off upper stories from the brood-chamber without tearing loose any burr-combs more or less filled with honey. The under side of the bar has a molded bead which, when no foundation is used, will be used by the bees as a comb-guide. To this bead, foundation can be rolled on with the Daisy foundation-roller shown in Fig. 55.

An important improvement, which we introduced in 1897, and which met with ready favor, was reducing the length of the projection by which the frame is supported. This leaves a bee-space around the end, as shown at 6, in Fig. 24. A staple under the projection, and abutting against the metal rabbet just opposite, prevents end-play and propolis-sticking. In removing a single frame with the long top-bars it was sometimes necessary to break this gluing of the ends of several frames before one sought could be removed.

Thick-top Staple-spaced Frames.

There is a class who, while they regard with much favor self-spacing in frames, object to the Hoffman, either because they have not learned how to use it or because in their locality propolis is deposited so freely as to render handling of this particular style not as pleasant or perhaps as rapid as some frame having a metallic spacer with less edge of contact. For bee-keepers of this class we know of nothing as good or as cheap as our regular thick-top frame we have sold for years with staples driven as shown in Fig. 23. One is

driven under the projection of the top-bar at each end, one on each diagonally opposite side, making four in all for each frame. They may be used in the end-bars lower down, but we do not regard them as necessary. Full directions, with gauges for regulating the depth of the staples, with illustrations, go with each lot of frames.

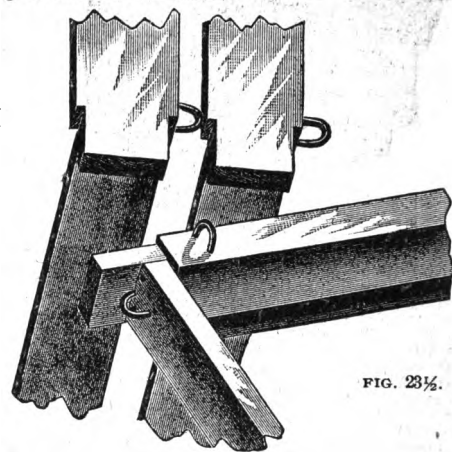


FIG. 23.

These frames may be handled in every way as the Hoffman, save in the one point that they can not be picked up in pairs or groups as can the Hoffman. But to offset this they may be separated—that is, pried apart from each other easier—and this in some localities, and with some bee-keepers, is quite important.

This frame with staple spacers is no experiment, for we find it has been used for years, and quite largely, in parts of York State, where propolis is a little too plentiful for the Hoffman. If there are some who prefer a plain unspaced frame, the side staples may be left off entirely; but it will be necessary to use the staples under the top bar projections.

These frames will be supplied in regular hive combinations only when so ordered.

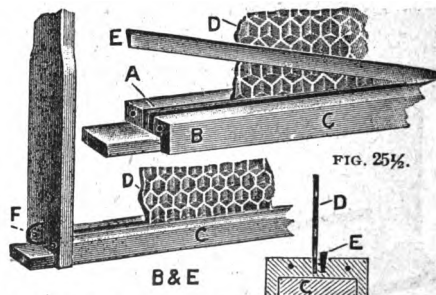


FIG. 25.

A few have found difficulty in fastening foundation to our regular thick top-bar, and to such we are prepared to furnish, when so ordered, without extra charge, our grooved top-bar as above shown. It has on the under side a double groove, in one of which the foundation is inserted and in the other the long wedge-shaped strip E driven, crowding the thin partition against the foundation, thereby securing it fast.

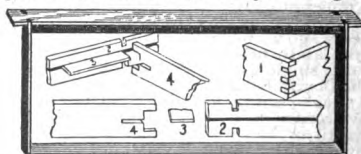


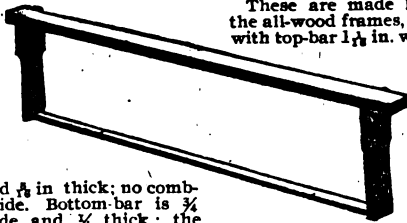
FIG. 22.—All-wood Frames.

These are the same that we have sold for many years. They are not proof against burr-combs nor sagging of the top-bar, unless braced with wire. Their only merit is cheapness.

Shallow Extrasting-frames.

These are made like the all-wood frames, but with top-bar $1\frac{1}{4}$ in. wide

FIG. 26.



and $\frac{1}{4}$ in. thick; no comb-guide. Bottom-bar is $\frac{3}{4}$ wide and $\frac{1}{4}$ thick; the end-bars are Hoffman self-spacing style, $5\frac{1}{2}$ deep, end-spaced with staple same as full-d ph Hoffman frame, Fig. 24.

Price List of Brood-frames.

Name.	Put up		In flat		Wt. of
	100	10	100	1000	
Hoffman frames, end-spaced	2 50	20	1 80	15 00	35 lbs.
Thick-top staple-spaced frs.	2 00	18	1 50	12 50	35 lbs.
All-wood frames	2 00	15	1 20	10 00	25 lbs.
Shallow ext. frames ($5\frac{1}{2}$ -in.)	2 00	15	1 20	10 00	22 lbs.

Nails included with all frames to nail them up. End-space staples, including gauge for driving, 15c per lb.; $2\frac{1}{4}$ lbs. enough for 100 frames, 30c; $\frac{1}{4}$ lb., for 100 frames, with gauge, 5c.

Odd-sized Frames.

The frames described on the previous page are all the Langstroth size, that fit all the hives we sell, and measure outside $9\frac{1}{2} \times 17\frac{1}{2}$ inches, top-bar $18\frac{1}{2}$ inches, except in the all-wood frames top-bar is $19\frac{1}{4}$ inches. We will make other sizes, when wanted, of all but the Hoffman frames at the same price as above with 50 cents on the lot added for setting our machines. For the Hoffman frames, odd size, the charge will be \$1.00 on the lot for setting machinery. We do not care to accept orders for less than 100 odd-sized frames of any kind.

How to Wire Frames.

After testing carefully several different methods of wiring frames, duly considering the reports from others, we have come to the conclusion that *horizontal* wiring is the most simple and satisfactory of all. The end-bars should be pierced by four holes equally distant, before nailing. The wire should be threaded through all the holes, and drawn just tight enough to take up the slack (be sure not too tight or the foundation will buckle). At each hole of the terminal wires, drive a small tack; and around them wind the loose ends of the wire, and drive the tacks up to the heads. The wires should now be parallel to the top and bottom bars, and two inches apart, the first wire one inch from the top-bar, and the last wire $\frac{3}{4}$ inch from the bottom-bar. Cut the foundation $\frac{3}{8}$ inch shallower than the inside depth of the frame. Lay the top edge against the comb-guide and fasten by rolling it with the Daisy foundation-roller as shown elsewhere. The wire should be imbedded in the regular way, and the work is done. We always use wired frames, and recommend others to do so; i. e., if they intend to use full sheets of foundation. As the majority do not, we pierce the end-bars only when so ordered. Our price for this is, including sufficient wire, 10c per 100 extra on the price of the frames.

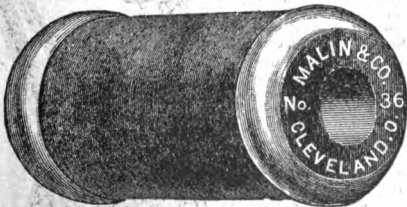
Tinned Wire.

FIG. 28.

No. 30 tinned wire seems to be the most suitable of any for wiring frames. An occasional customer prefers it a little finer, and once in a while it is wanted coarser. All things considered, this size is best. We have it wound for us in large quantities, and are prepared to furnish it in almost every style. We keep it in stock of the following sizes:

Price List of Tinned Wire.

Sizes furnished.	Price each	doz.	Post.
$\frac{1}{4}$ -oz. spools No. 30 tinned wire	\$ 08	25	02
$\frac{1}{2}$ lb. spools No. 30 tinned wire	10	90	06
$\frac{3}{4}$ lb. spools No. 30 tinned wire	15	1 50	10
1 lb. spools No. 30 tinned wire	25	2 40	18
5-lb. coils No. 30 tinned wire	70		

Chaff Division-boards.

These are made of thin wood, packed with chaff, and have cloth cushion bottom and ends, that they may fit closely in any hive, and be easily removable.

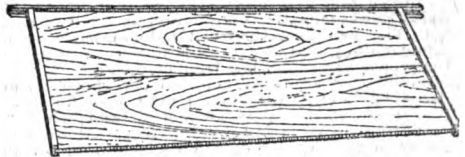
Plain Division-boards; no Chaff.

FIG. 29.

One of these is put into each of the Dovetailed hives we send out, and is used as a follower with spacing-frames, such as the Hoffman or closed-end. They have the same outside dimensions as brood-frames, and are $\frac{1}{4}$ inch thick.

Price List of Division-boards.

	Pr. of 1-10		Wt. of 10
Chaff division-board, complete	\$ 20	\$1 80	20 lbs.
Chaff division-b'd, flat, no chaff	10	90	13 lbs.
Plain division-board, nailed	10	80	10 lbs.
Plain division-board, flat	08	50	9 lbs.

Super Covers.

Price for 8 and 10 frame hives, 10c each.

With covers like the telescope which leaves more than a bee-space above the sections, you need a super-cover. Some use an enamel sheet, but the most satisfactory cover is a thin board bound on the ends to prevent warping. We make these $\frac{1}{4}$ inch thick and bound with tin. They should be supported a bee-space above the sections or frames.

Hill's Device.

FIG. 30.

Price 50 cts. for 10; by mail, 5 cts. each extra.

This is placed over the frames and under the cushion to form a chamber for the bees to cluster in, and to allow them to pass freely from one comb to another over the top of the frames. It is quite necessary in cold climates to use something for this purpose, and this device fills the bill the best of any thing.

Van Deusen Hive-clamp.

Price 35 cts. for 10 pair, including two screws with each clamp; postage, 8c per pair extra.

Price without screws, 30c for 10 pair.

These are very convenient for fastening loose bottoms when you want to move the hives. They may also be used to hold the cover on, or two bodies together. They are of malleable iron, japanned. A nail will answer for the clamp to rest on when open, and is less expensive than a screw.

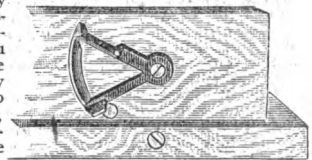


FIG. 31.

Quinby Corner-clamps.

These are used on hives which are not otherwise fastened together at the corners. There are 12 pieces of castings in each set of corners. Price \$1.20 per 10 set; postage, 18 cts. per set.

SECTION HONEY-BOXES.

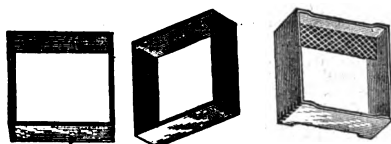


FIG. 3.—One-piece V-groove Sections.

The making of sanded and polished one-piece sections is one of our specialties, and our output last year was about thirteen million. Having an investment of thousands of dollars in special automatic machinery, we are enabled to turn out a product that for quantity, finish, workmanship, and accuracy, can not be excelled. The sections are polished in double-surface sanding-machines; and the result is uniform quality, and the same absolute thickness from end to end.

Our No. 1 sections are made of the choicest white basswood lumber, and are all perfect in finish, and free from defects. They are not all snow-white, but vary from that to a light-cream color. Choice honey shows off to best advantage in a section not too white, as it is the honey rather than the wood that the consumer looks at.

Our No. 2 sections selected from our best grade sell at a price considerably less than the No. 1; but in workmanship and in every other respect (except color and occasional saw-marks and spots) they are equal to the finest section we make. We do not make the No. 2 grade to order, but have them only as they accumulate in making No. 1.

Different Styles of Sections.

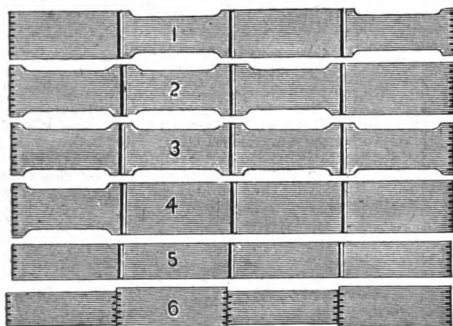


FIG. 39.

Style 1, *open top*, has been the most common pattern, open top and bottom.

Style 2, *open three sides*, has been recommended by the Dadants, because by using it you can have tops closed or open and the sides open.

Style 3, *open all around*, is open on all four sides.

Style 4, *closed top*, is open on one side only.

Style 5, *plain*, no bee-way, used with fences or cleat separators.

Style 6, *dovetailed all around and open top*.

Size and Width of Sections.

The section in common use for a good many years back has been $4\frac{1}{4}$ inches square; but in the last year or two there has been a tendency toward a section taller than broad. Last year we put out, rather cautiously, the 4x5, and it has taken so well that it is now one of our regular sizes. This year, in answer to a demand for a smaller section, and something that will just fit in an eight-frame super, we bring out our 3 $\frac{1}{2}$ x5. Our three regular sizes will be the $4\frac{1}{4}$ x $4\frac{1}{4}$; the 4x5, and the 3 $\frac{1}{2}$ x5.

Up till this year, sections were almost universally provided with bee-ways, as shown in styles 1, 2, 3, 4, Fig. 39; but for reasons stated under Hives, page 5, it would look now as if the bee-way sections would soon give place to the no-bee-way, or, as we shall call it, the "plain" section. This is shown in style 5, Fig. 39. We have for years made this style of section, but only within the last few months have we and our bee-keeping patrons discovered that they were much superior in every way to the section provided with openings. As the merits of the plain sections are fully set forth on page 5, we will not attempt to go over the ground again; nor will we discuss the reasons why the tall section has been receiving prominence of late, for

that question is likewise covered on page 5. But with any of the plain sections the fence or cleated separator must be used. The cleats on the fence take the place of the bee-ways on the old style of sections.

Besides the matter of breadth and height, there is one of width (or that which regulates the thickness of combs), and this will depend largely on whether the sections are provided with bee-ways as shown in styles 1, 2, 3, 4, Fig. 39, or plain, as shown in style 5. The regular size of section hitherto has been $4\frac{1}{4}$ square by $1\frac{1}{4}$, with the usual bee-way. This same section without bee-ways will be exactly $1\frac{1}{4}$, and will hold the same amount of honey. The old seven-to-foot, with bee-ways, will be $1\frac{1}{4}$ without bee-ways. In any case, to get at the width of a plain section, we ordinarily figure on about $\frac{1}{4}$ for a bee-way; and if a section was formerly plump $\frac{1}{2}$ inches in width, with the bee-ways, without them it will be $1\frac{1}{4}$.

The section that promises to be standard is $4\frac{1}{4}$ square by $1\frac{1}{4}$.

Price List of Sections.

$4\frac{1}{4}$ by $4\frac{1}{4}$ by any width $1\frac{1}{4}$ to 2.

Widths of style 1 sections generally kept in stock are $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$, 7-to-ft., while $2\frac{1}{4}$, and $1\frac{1}{2}$ can also be furnished; plain sections, $1\frac{1}{4}$, $1\frac{1}{2}$, and $1\frac{3}{4}$. When you do not specify style or width we will send style 1, $1\frac{1}{4}$ inches wide. In style 5, $1\frac{1}{4}$ -inch will be sent if width is not specified.

	No. 1.	No. 2.		No. 1.	No. 2.
Per 100.....	\$.50	\$.40	For 2000.....	\$ 5.70	\$ 4.70
Per 250.....	.85	.75	For 3000.....	8.25	6.75
Per 500.....	1.50	1.25	For 4000.....	11.00	9.00
Per 1000.....	3.00	2.50	For 5000.....	12.50	10.00

Sections 3 $\frac{1}{2}$ x5x $1\frac{1}{4}$, plain, same price as above.

Larger quantities quoted on application. Sections 4x5x7-to-foot, with openings both sides, $1\frac{1}{4}$ openings one side, or $1\frac{1}{4}$ plain, 10 cents per M more than above prices. Other sizes of one-piece sections will be furnished in lots of 500 or more at the following price; namely, for the quantity wanted, take the price of the regular size, add to it 10 cts. per 1000 for each inch or fraction of an inch that the size you want unfolded exceeds in length the regular size, the length of which is 17 inches. Add also 50 cents on the quantity ordered, whether 500 or 5000, to pay for adjusting machinery to the odd size. For instance, if you want 2000 sections 5x5: The size exceeds the regular $4\frac{1}{4}$ size unfolded, 8 inches. The price would then be \$5.70, plus 80c. plus 50c. or \$6.80 for the 2000. If the odd size you want is larger one way than it is the other, indicate which way you want it to stand up in the hive—thus: ☐ or thus: ☐ or give the bottom or horizontal measure first, and the upright or side next, and also give the width, and specify the style wanted. Unless you are careful to give all these details fully we shall be obliged to delay to fill your order.

Material for Dovetailed and Nailed Sections.

Material for nailed sections will be polished the same as one-piece; for dovetailed-all-around sections, style 6, pieces will be sawed smooth. Price of either kind will be 50c per 1000 more than the same size of one-piece sections, but no extra charge is made for adjusting machines.

Hubbard Section-press. Pat'd.

Price \$2.50; wt. 25 lbs. This is the best machine for putting together the one-piece section that we have tried, and we have seen most of them. The ends of the section are forced together by means of a toggle joint, a principle by which great power can be applied. With it a child can fold about 500 one-piece sections per hour. Place a pile of sections in your lap, pick up one, fold it, and then throw the section into a large basket. They are made adjustable for sections of different sizes.



Dovetailed T Super.

While we consider the section-holder arrangement for holding sections on the hive superior to any other, there are those who have used the T super so long, and to the exclusion of all others, that they are not easily persuaded to use anything else. The regular dovetailed super is one inch too long, and $\frac{1}{4}$ inch too deep, to hold four rows of $\frac{1}{4}$ -inch sections. It is just right for sections $\frac{1}{4}$ inches square; but most beekeepers prefer to use the regular size, $\frac{1}{4}$ square. We have, therefore, made a dovetailed T super $\frac{1}{4}$ inches deep and $1\frac{1}{4}$ long inside, with cleats on the ends, just like the one shown, Fig. 42, but without thumb-screws, and with loose T tins, so that it may be used on the regular Dovetailed hive or the dovetailed chaff hive. This arrangement is used by Dr. C. C. Miller and others. Any width of section may be used by varying the size of wedge back of the follower. When no width is mentioned in orders for complete supers, we send the regular width of sections, $\frac{1}{4}$ -inch plain with fences. Fences used in these supers are designated T fences. When fences are used no follower is used.

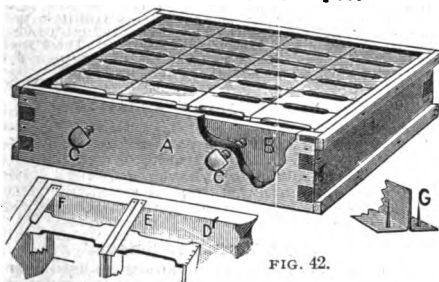
Hilton Dovetailed T Super.

FIG. 42.

Geo. E. Hilton and others use and recommend supers with T tins nailed fast. He also uses thumb-screws for compression instead of the simple wedge.

Price List of Dovetailed T Supers.

Name and Description.	Price each, nailed.	In flat, 10 of 10.	Weight 40 lbs.
Dov. T supers, with tins only	25c	\$1.50	40 lbs.
Dov. T super complete except sections and starters	35c	2.50	50 lbs.
Dov. T super complete	50c	3.50	70 lbs.

Regular dovetailed super with T tins for $\frac{1}{4}$ -inch sections at same prices; also the Hilton Dov. super.

Slotted or pattern separators can not be used in T supers, and $\frac{3}{4}$ or $\frac{3}{8}$ inch sawed separators are used with slotted sections, or fences with plain sections.

Price List of T Tins per 100.

	Weight
T tins, 12, 13 $\frac{1}{2}$, 14 inches long or under	\$1 00 7 lbs.
T tins, 16 in. and under, to 14 in. long	1 20 8 lbs.
T tins, over 16 in., up to 20 in.	1 50 10 lbs.
Flat tins, 14 in. and under, $\frac{3}{8}$ wide	40 3 lbs.
Flat tins, 14 to 20 in. long	60 5 lbs.

Staples for T-tin Rests.

Bent staples, about 400 to 1b., 3 oz. 10c; 1 lb. 40c.
Straight staples (unbent), 3 oz. 5c; 1 lb. 20c.

Wood Thumb-screws.

Of hard maple for side compression as in the Hilton super, screw $1\frac{1}{2}$ in. long. Price per 100, \$1.25; post. 40c.
Taps for cutting thread for screw, \$1.25 each.

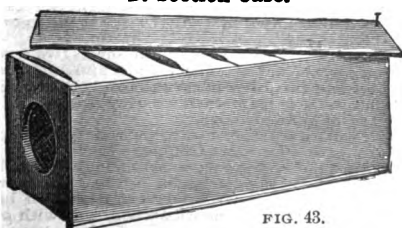
D. Section Case.

FIG. 43.

Price of D. section-case complete with sections and starters, 12c each; 10 for \$1.00.

In flat, no sections or starters, 5c each; 10 for 40c.
Above are 12 inches long, fitting crosswise the eight-

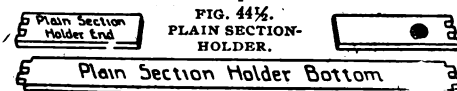
frame super. Will make them 14-inch for ten-frame hives at 1c each extra. In flat, 46c for 10.

This case is designed to take the place of the old farmer's honey-box, and will be appreciated by many for various reasons. It is of such a size that it can be used on almost any hive, and if you choose it can be sold entire just as filled by the bees.

Section-holders and Separators.

FIG. 44.—SLOTTED SECTION-HOLDER.

Slotted section-holders and slats are used with styles 1, 2, 3, or 4 bee-way sections, while plain section-holders and slats are used with plain sections.

FIG. 44 $\frac{1}{2}$.

PLAIN SECTION-HOLDER.

Slotted separators are used in connection with slotted section holders and plain sawed separators in T supers or on wide frames in connection with bee-way section.



FIG. 45.—WOOD SEPARATOR.

sections, while fences are used with plain section-holders and slats in connection with plain or no-bee-way section.

Price List of Section-holders, Separators, and Slats.

	Price of 100	Price of 500	Wt. 100
Slotted section-holders, $1\frac{1}{2}$ x $18\frac{1}{2}$ outside	1 20	5 00	35 lbs
Slotted section-slats, $1\frac{1}{2}$ x $18\frac{1}{2}$ outside	60	2 50	15 lbs
Plain section-holders, $1\frac{1}{2}$ x $17\frac{1}{2}$ outside	1 00	4 50	0 lbs
Ideal plain slats, $3\frac{1}{2}$ x $1\frac{1}{2}$ x $18\frac{1}{2}$	60	2 50	18 lbs
L plain slats, $3\frac{1}{2}$ x $1\frac{1}{2}$ x 12	40	1 80	10 lbs
Slotted sawed separators, $4\frac{1}{2}$ x $18\frac{1}{2}$	60	2 50	8 lbs
Plain sawed separators $8\frac{1}{2}$ x 17 to 20	40	1 80	6 lbs

Fences or Cleated Separators.

In connection with the plain sections of various sizes and in different styles of supers, a number of different fences are required, as explained fully under Hives. We show here the different fences with prices:

I	I Fence.—\$1.25 per 100; \$11.00 per 1000. Used in deep super with $8\frac{1}{2}$ x $5\frac{1}{2}$ plain sections.
P	P Fence.—\$1.00 per 100; \$9.00 per 1000. Used with Dov. super with plain section-holders and $4\frac{1}{2}$ x $4\frac{1}{2}$ plain sections.
S	S Fence.—\$1.20 per 100; \$10.00 per 1000. Used with plain $4\frac{1}{2}$ sections in slotted section-holders.
T	T Fence.—\$1.00 per 100; \$9.00 per 1000. Used in T super with $4\frac{1}{2}$ plain sections. With cross-slots, as shown, 10c per 100 extra.
L	L Fence.—\$1.00 per 100; \$9.00 per 1000. Used crosswise in 8-frame deep super with $4\frac{1}{2}$ x $1\frac{1}{2}$ plain section.
M	M Fence.—\$1.50 per 100; \$13.00 per 1000. Used in Danz. super with $4\frac{1}{2}$ x $1\frac{1}{2}$ plain sections.
O	O Fence.—\$1.50 per 100; \$13.00 per 1000. Used with $4\frac{1}{2}$ x $1\frac{1}{2}$ plain sections in 7-to-ft. Danz. section-holders.
N	N Fence.—\$1.50 per 100; \$13.00 per 1000. Same as O fence, cleated one side only.
I, M, and O	I, M, and O fences weigh about 15 to 18 lbs. per 100.
P, S, T, and L	P, S, T, and L fences weigh 10 to 12 lbs. per 100.

COMB FOUNDATION.

All our comb foundation is made of bright pure yellow beeswax. By a special process of refining we are enabled to eliminate every particle of impurity without destroying the natural aroma. We have been asked a number of times what we put in to make it "smell so nice." We answer, nothing at all. When it is refined as we do it, its own beautiful aroma will be very apparent.

Weed New-process Foundation.

(Machinery and process patented.)



Having acquired the patents covering the making of this new article, we introduced two years ago the Weed new-process foundation. Its distinct points of merit over the old were so marked and decided that it sprang almost instantaneously into favor. The result was, that our sales of comb foundation last year were nearly double the year before, and three times the year previous.

The new sheeted wax has been tested by experiment stations and by private individuals, and has been shown to be, beyond a doubt, tougher, more easily worked by the bees, and more transparent, than any foundation ever before made. Careful measurements have shown that, in the working by the bees, the new process elongates only one-fifth as much as the old process; that is to say, in the hive the stretch or sag of the old-method samples aggregates just five times as much as the new-method ones. It has been, therefore, possible to make all our grades lighter than formerly, and we have thrown out from this catalog "heavy brood" foundation entirely. As the new process is lighter, it goes farther; and, even at the same price per pound, it is cheaper, because there are more square feet to the pound of the same grade. Compare the number of sheets in a pound with any old-process foundation offered at lower prices.

In point of transparency, no foundation has hitherto equaled it. It is clear as crystal, for when the article is laid upon a page of reading-matter it is possible to read through it very readily. This transparency is, in fact, due to the peculiar method of sheeting. The wax is forced through dies under enormous pressure into continuous sheets, or belts, as it were, and reeled up on large bobbins. This enormous pressure compresses or swedges the wax so as to crowd out all air-cells, making a product that is perfectly homogeneous. The continuous sheets are then run through power foundation-rolls, from which automatic machinery takes the wax from the mill, trims it and lays it in nice even piles, with a sheet of paper between each two sheets of foundation.

Still another point: Our automatic pulling-off machine pulls the foundation very gently, and consequently does not elongate the cells as does the old-fashioned way. This makes a difference in favor of the new-process foundation of something like 800 cells to the Langstroth frame.

Our Foundation-machines.

Our foundation-machines are used almost exclusively in the United States, France, Germany, and Australia, and very largely in England. As the machines for our foundation department are made in our own shop by skilled workmen, just as soon as the face of the rolls becomes the least worn or defective we put in new sets, for it doesn't pay us to tinker up old rolls. The consequence is, that the Weed new-process foundation is not only tough and beautiful, but it is as perfect as new and accurate die-faces can make it.

Why Our Foundation Must Be Pure.

Our wax is absolutely pure. Indeed, the new Weed sheeting-machine, strange as it may appear, refuses to handle even a very small percentage of paraffine mixed in the wax. We do quite a business in furnishing dental wax; and this trade calls for mixtures of beeswax and paraffine; and in endeavoring to sheet the mixtures we found the machine balky. While this is somewhat of a detriment to the dental trade, the fact speaks volumes for the purity of the new-process foundation.

We guarantee all our foundation to be fully equal to samples in every respect, and invite comparisons with other makes. Samples free.

Testimonials on the New Process.

We have not space in this catalog to give place to the hundreds of testimonials praising the new-process foundation; we can, therefore, give only a few from prominent bee-keepers; and here they are:

Mr. O. O. Poppleton, of Stuart, Fla., a bee-keeper of large experience, to whom we sent samples of the same grade of both the old and the new process early in the season of '96, writes:

I gave all the light and medium brood foundation I had left to a neighbor Mr. B. Parks, with proper instructions; and he reports to me that the average stretch or sag of the old method samples aggregate just five times as much as did the new-method ones, being almost exactly the same as in my tests with the light weights previously reported. My own later tests were made with heavy makes, which were alternated in hives into which heavy prime swarms were put. The difference was so plain that a novice could have picked out each kind by its self at a single glance.

O. O. POPPLETON.

Mr. Thos. Wm. Cowan, editor of the *British Bee Journal*, and author of the *British Bee-keepers' Guide Book*, a work that has had an enormous sale, and been translated into six languages, says:

I have had an opportunity of trying the Weed foundation. I like it very much, and certainly think it is all that is required.

THOS. WM. COWAN

Mr. F. Sladen, of Ripple Court, England, pays the new Weed process a very high encomium.

Your Weed foundation, despite a strong prejudice in several quarters against it on its introduction, has literally taken the foundation market by storm. It has three great advantages over our home made product: The bees take to it faster; there is more surface to the pound, with less liability to twist, and it is literally cheaper in most cases than English foundation. Its enemies have given it this last pull. There is also another point about it to be noted. It is of uniform quality, and the consumer knows that he is getting genuine goods with it.

F. SLADEN, A.

The Use of Comb Foundation.

There is little question but that it pays to use foundation in full sheets in the brood-frames and sections, especially the latter. If you think you can not afford so much, you should at least have a strip for a starter. It will help much more than it costs, in getting straight even combs. You can use a starter any width from one inch up.

What Weights to Select.

Medium and light brood foundation are used only in brood-frames; thin and extra thin super, only in super boxes.

For frames without wire, and those deeper than L. frame, medium brood should be used. We do not recommend light brood in full sheets without wire, although under many circumstances it can be used in safety without, for the method of making renders this grade much less liable to sag than formerly.

If you use only a starter in section boxes, thin foundation is best; if full starters are used, extra thin will be better, as it is not so perceptible in the honey when finished, and does not make what has been called "fishbone" in comb honey. It being so thin, some have had trouble with the bees tearing it down, and therefore they prefer to use thin.

For the person who is not sure what he wants, we advise medium brood for use in the brood-frames, and thin super for sections.

Table of Prices of Comb Foundation.

When you order, be sure to tell which grade you want, and give price.

NAME OF GRADE.	Size, and sheets per pound.	—in lots of—			
		1 lb	10	25	50
Medium brood.....	7 $\frac{1}{2}$ x16 $\frac{1}{2}$ 6 to 7	45	43	41	40
Light brood.....	7 $\frac{1}{2}$ x16 $\frac{1}{2}$ 8 to 9	47	45	43	42
Thin super.....	3 $\frac{3}{4}$ x15 $\frac{1}{2}$ 28	52	50	48	47
Extra thin.....	3 $\frac{3}{4}$ x15 $\frac{1}{2}$ 30	55	53	51	50

For 100 lbs. or over, write for wholesale price.

Foundation packed for mailing requires 25 cts. per lb. postage. Not less than 1 lb of brood foundation, L. size, can be packed safely for mailing, nor less than 8 lbs. of larger sizes. Brood foundation is made in one regular size, 7 $\frac{1}{2}$ x16 $\frac{1}{2}$, which is just right for the L. frame, wired or unwired. Other sizes made to order, up to 12x20 inches.

Thin and extra-thin super is in sheets two regular sizes, either 3 $\frac{3}{4}$ or 7 $\frac{1}{2}$ inches wide and 15 $\frac{1}{2}$ inches long. We can furnish other widths and other lengths. When no size is mentioned we always send the regular sizes mentioned above.

For less than 5 lbs. of any other size than regular, add 5 cts. per lb. for extra trouble in trimming.

Order in regular-sized packages as far as possible, 1, 2, 3, 5, 10, and 25 lbs. Packages of 5 lbs. and less are put up in neat pasteboard boxes so there will be no danger of damage to the wax when sent with other goods.

We pay market price for BEESWAX. See quotations in *Gleanings*, or given on application. We pay at date of this catalog 25 cts. cash, 27 cts. in trade, for average wax delivered at our place of business.

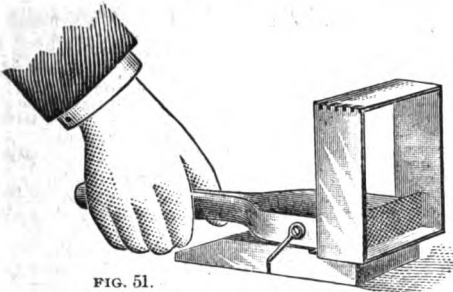
PARKER'S FOUNDATION-FASTENER.

FIG. 51.

Price, for 1-lb. sections, 25c; by mail, 15c extra.

Price, for odd sizes, 35c; by mail, 20c extra.

Directions for Using.—Fasten machine to a bench or table; put a little honey on point of lever where it touches the foundation; slide box under lever, against stop; put foundation under $\frac{1}{4}$ inch; raise back end of lever, at same time turning the piece of foundation up

against end of lever; slide lever off the foundation; this movement fastens it firmly to the box. With a little practice the machine can be made to work very satisfactorily.

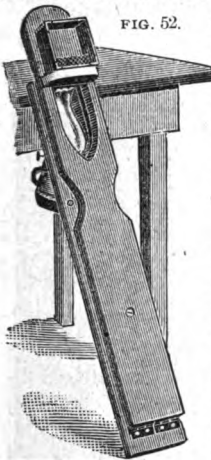


FIG. 52.

DAISY FOUNDATION-FASTENER.

Price with lamp.....\$1.00

Price without lamp..... 70

Weight without lamp.....5 lbs.

This is the best for putting starters into sections. Nothing could be more simple, or more easily operated than this machine; and we are sure it will put starters in better and faster than any machine before produced. With this, a boy or girl will put starters in about 500 sections per hour, and do it nicer than any of the presser machines we formerly sold. Complete directions accompany each machine.

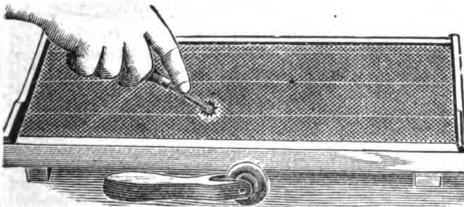
SPUR WIRE-IMBEDDER.

FIG. 53.

Price 15 cents; by mail, 18 cents.

This is a little tool like a tracing-wheel, with teeth set in such a way as to straddle the wire while it is in the act of imbedding. It is the best tool we have ever tried for that purpose.

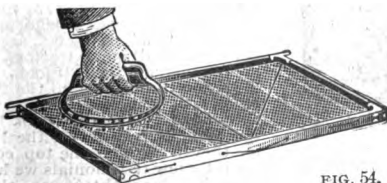
EASTERDAY'S WIRE-IMBEDDER.

FIG. 54.

Price 15 cents; by mail, 21 cents.

This is the old-style rocking device made of tin. We do not consider it as good as the spur, but can furnish it to those who prefer it.

ELECTRICAL WIRE-IMBEDDING OUTFIT.

Price of outfit complete \$2.50.

If you have very much foundation to put on wired frames, it will pay you to use this outfit. The saving in time and the nicety of the work will more than pay the extra cost. It includes a battery of two cells, chemicals, and all the necessary tools. The batteries heat one strand of the wire at a time, so that it sinks into the foundation by simply pressing lightly on the sheet on the reverse side with the Blood roller, or even with the hand. Directions for use accompany each outfit.

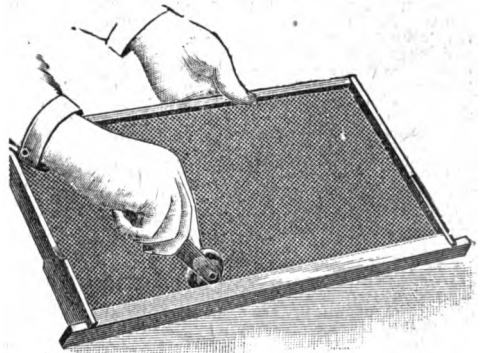
DAISY FOUNDATION-ROLLER.

FIG. 55.

Price 15 cents; by mail, 18 cents.

This is Hambaugh's roller, shown in Dadant's Langstroth Revised, adapted so as to fasten foundation to our molded top-bars. All that is necessary is to lay the sheet on the wires, dip the roller into water to prevent the wax from sticking, and pass it along the edge of the foundation. The first time over, the pressure should be light, and increased until the edge is firmly pressed into the wood. We have two styles—one for our molded top bar and one for the old-style flat top-bars, either of which does the work perfectly. In your order be sure to specify which style of top-bar you wish to use it on. We send the one for molded top bar unless you do.

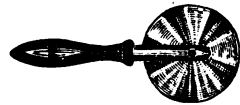
CARLIN'S FOUNDATION-CUTTER.

FIG. 56.

Price, with tin wheel, 15 cents; by mail, 18 cents.

Price, with steel wheel, 60 cents; by mail, 65 cents.

These are very convenient for cutting a great number of small pieces, one sheet at a time. The wheel should be kept hot by occasionally immersing in hot water. We prefer, however, for larger work, to cut a board the size wanted, and lay it on a pile of half a dozen sheets or more, then, with a very sharp, round-pointed butcher-knife, cut with repeated strokes through the whole at once, clear round the board. If the wax is neither too cold nor too hot, and you keep your tool lubricated, you can, with practice, do it rapidly and nicely.

Round-pointed butcher-knife, 15c; by mail, 20c.

THE TAYLOR HANDY COMB-LEVELER.

This is a very handy and useful device for reducing the combs of unfinished sections after the honey is extracted to the same level, and at the same time taking off the soiled and thickened edges left by the bees at the top of the cells. Such combs, with their clean thin edges, are promptly accepted by the bees, are nicely filled out and capped, and increase very materially the next year's honey crop. Full directions accompany each leveler.

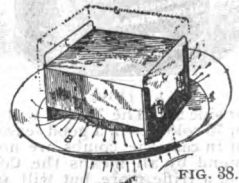


FIG. 58.

Price \$1.00; postpaid, \$1.25.

BEE-KEEPERS' SUPPLIES.

HONEY-EXTRACTORS.

During the last few years we have made great improvements in our extractors. Sample machines of each class have been submitted to large honey-producers for their criticisms and suggestions. All the suggested improvements were carefully considered, and, so far as they were feasible from a mechanical point of view, were adopted. The material and workmanship are the very best that money, skilled mechanics, and machinery, can turn out, so that now we confidently believe we are offering to the public the very best machines, both in point of practical construction, material, and workmanship, that can be produced.

The honey-gates are made larger, and with ground joints. The bottom of can, instead of being depressed to a common center, is raised, so as to be cone-shaped. This makes it very much easier to clean the can, and at the same time prevents any possibility of the frames or comb-pockets from catching in the honey. The tops are stiffened with a good substantial iron hoop. This is further stiffened by a cast-iron cross-arm supporting the gearing. This latter is of the beveled form, leaving the handle at the side, out of the way for putting in and removing the frames. The gear-wheels themselves are protected by—or, rather, covered with—a thin cast-iron shield, rendering it impossible to catch aprons, baby fingers, etc. The cans are made of galvanized iron; and it is found that this is much more durable, does not tarnish, does not rust, nor in the least affect the honey. The baskets, or pockets, are braced much stronger than is shown in Fig. 61; i. e., additional stays and braces have been put in, so that they are fully able to resist the hardest service. So much applies to all extractors we make.

Price List of Novice Extractors.

In ordering odd-sized extractors, give outside dimensions of frame and length of top-bar.

No. 4.—For all frames 13 inches or less in depth and 13½ inches or less in width (wt. 50 lbs.).....	\$7 00
No. 5.—For L. or Simp. frame standing on end, or any other frame not over 9½ in. deep, or 18½ long, top-bar 20 in. (wt. 45 lbs.).....	7 00
No. 7.—For frames deeper than the L., but not over 11½ in. deep (wt. 60 lbs.).....	8 00
No. 10.—For still deeper frames not over 13½ in. deep, or 18½ width (wt. 60 lbs.).....	8 00
Any above numbers with milk-can handles, 25c extra.	
" " " " 60 lbs. space below, 50c "	
" " " " 100 " " " 1.00 "	

The weights given are for machines well crated to go by freight. We can crate 10 lbs. lighter for express. Dimensions of frames given are *outside* measure. To avoid mistakes, *always* give the size of your frame *outside measure*; also the *length of top-bar*. Where no size or number is given, nor any thing as a guide, we will send the machine for L. frame, as that is the American standard. This applies also to Cowan extractors.

The Cowan Rapid Reversible Extractor.

Ever since the introduction of this most excellent machine, some years ago, bee-keepers have been quick to appreciate its advantages, not only over the non-reversible type of machines, but over any other reversible ever put on the market before. It will handle the product of large apiaries, and yet is comparatively small and light, as seen in Fig. 58. It is simple in construction, and reversible. The pockets, or baskets, are hinged, gate fashion, and swing inside of a pair of 8-sided hoops, as it were. When the combs are extracted on one side, the machine is stopped, the left hand catches hold of the basket, and swings it around the other side to, door fashion. A slight turning of the handle brings the other basket around, to be reversed in the same manner.

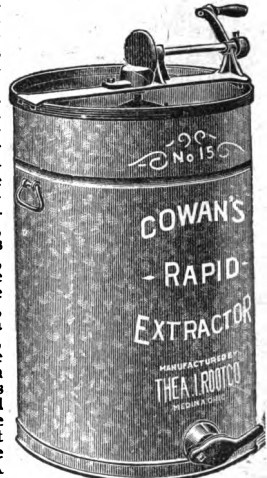


FIG. 60.

While the operation is not done automatically, it is positive and more rapid than in the so-called automatic machines. The reversing may also be effected without stopping the machine—the reel is simply slowed up. The outer edge of one basket is caught by the hand, and as the reel continues to revolve the basket is thrown the other side to. The other basket is caught and reversed in the same manner. In other words, the hand holds the outer edge of the basket stationary while the revolving reel throws the pocket around. The motion is speeded up again; and the result is, that the combs are extracted on both sides without once stopping the machine. After the knack is acquired, the operation can be performed very quickly and easily. The machine has been improved for this year by making the hinge castings malleable. Anchor-rods, as shown in adjoining cut, are included with all our extractors. By means of these the extractor may be securely fastened to the floor or bench. On the Cowan machines the anchor-rods hook into the handles, while with the Novice they hook over the top edge.



FIG. 63½.

We should like to print a few testimonials we have received; but the number is so large that we are obliged to leave them out here. It is sufficient to say that the Cowan is indorsed by all the large extracted-honey men who have seen or used it. It needs only to be tried to appreciate its superiority.

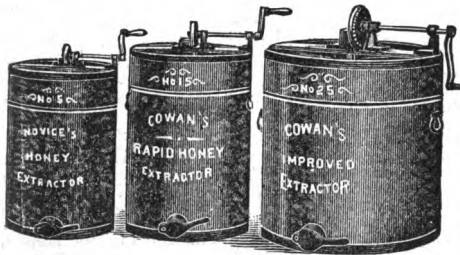


FIG. 58.—Showing the Relative Sizes.

The above cut will show, better than any thing we can say, the relative sizes of the three machines we build for Langstroth frames. They weigh respectively 25, 45, and 117 lbs., uncrated; and the diameters of the cans are, respectively, 17, 20, and 28 inches.

The Novice Extractor.



FIG. 59.

This is the old original machine, with several added improvements. Until the two-frame Cowan came upon the market, it was the best machine made. For those who want the smallest and lightest machine, as well as one moderate in price, this will fill the bill. It is a non-reversible two-frame machine; that is, the frames must be pulled clear out of the extractor, reversed in the air, and put back into the basket the other side to.

The Novice will handle the product of 50 or 75 colonies in a good season. For a larger number, or in case the combs are not wired, we would recommend by all means the Cowan reversible. It costs but a trifle more, but will save a large difference in time in handling the combs.

The Novice, like the larger machines, is now made of galvanized iron, which is stronger and more durable than tin.

Four and Six Frame Cowan Extractors.

These differ from the two-frame Cowans in that a center-shaft runs through the reel. This is necessary in consequence of the size of the extractor. The pockets and hinges are the same. Although these four and six frame machines are not automatic they can be reversed in the same time, and that, too, without stopping the extractor. While the machine is in motion, the left hand catches one of the baskets, retards its outer edge enough so that the revolution of the reel turns the basket, or leaf, the other side to; and as all the baskets are geared together by sprocket wheel and chain, as shown in Fig. 61, they are all reversed at once, the motion being slowed up enough to permit of this. It is an advantage to turn the crank

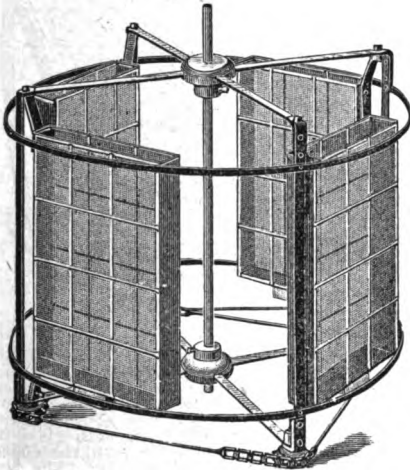


FIG. 61.—Inside View Only.

one way. The automatic reversing devices in the reversal of motion strain the gearing, and the mechanism is so complicated that something is liable to get out of order. In the extractors above, every thing is *substantial*; the hubs and projecting arms are of malleable iron of neat ribbed design; a brake is attached to crank-shaft—two new features for this year; the pockets are well braced; in fact, it is as thoroughly and well built as the two-frame Cowan. These 4 and 6 frame machines are used very largely by the extensive honey-producers of California.

Price List of Cowan Extractors.

No. 15.—2-frame Cowan for L. frames; comb-pockets, 9½ in., diam. of can, 20 in. (wt. 70 lbs.)	\$10 00
No. 17.—2-frame Cowan, for frames not over 11 inches deep, 22 in. in diameter (wt. 90 lbs.)	11 00
No. 18.—2-frame Cowan, for frames not over 12 in. deep, 24 in. in diameter (wt. 120 lbs.)	12 00
No. 20.—2-frame Cowan, for frames requiring larger than 24-inch can	14 00
No. 25.—4-frame Cowan for L. frames, 28 in. in diameter (wt. 150 lbs.)	18 00
No. 30.—6-frame Cowan for L. frames, 31 inches in diameter (wt. 180 lbs.)	24 00

Bevel Extractor Gear is preferred to any other by those who have tried it. Those we make are covered with a light iron shield to protect the gear from dirt and to keep baby fingers out. It is furnished on all our extractors.

Price List of Bevel Gears, etc.

Bevel gearing, including cross-arm and steel center shaft, complete, for 17-inch can (wt. 6 lbs.)	\$1 25
Bevel gearing for 20-inch can (wt. 11 lbs.)	1 50
Bevel gearing for 22-inch can (wt. 13 lbs.)	2 00
Bevel gearing for 24-inch can (wt. 15 lbs.)	2 50
Bevel gearing for 28, 30, or 31 inch can (wt. 32 lbs.)	5 00
Honey-gate for extractor, 1½-in. bore (post. 25c)	60
Honey-gate for extractor, 2-in. bore (post. 35c)	75
Honey-gate for extractor, 2½-in. bore (post. 50c)	1 00
Galvanized wire cloth for extractors, per foot	08
10 feet, 70c; by mail, 5c per foot extra.	

If any part needs replacing, write us, giving an accurate description of the part wanted, with sketch of it if possible, and tell for what size and style of extractor it is wanted.

HONEY-KNIVES.

FIG. 62.—The Novice Honey-knife.

This is by no means equal to the Bingham for uncapping alone, but useful for other purposes, such as scraping propolis off bottom-boards, covers, etc., for transferring and cutting chunk honey generally. The Quinby is the same knife with the point curved.



FIG. 63.—Bingham Uncapping-knife.

This style of knife is altogether the best for uncapping. It is made of the best American steel; and, as the cap-catcher is not used, no holes are provided for holding it.

Our Ten-cent Honey-knife.

Originally made for a kitchen knife, and of great value for that purpose.

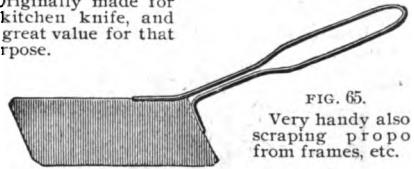


FIG. 65.

Very handy also for scraping propolis from frames, etc.

Price List of Honey-knives.

Novice honey-knife, 75 cents each; postage,	5 cents.
Bingham " 70 " " "	10 " "
Quinby " 90 " " "	5 " "
Muth " 50 " " "	5 " "
Ten-cent " 10 " " "	5 " "

DADANT UNCAPPING-CAN.

FIG. 66.

Price \$7.00; weight, packed for shipment, 56 lbs. This is made up of two 20-inch cans, one telescoping into the lower one a short distance. A wooden framework runs across the top to stay the comb during the operation of uncapping. The bottom of the upper can has a wire-cloth bottom properly stayed to receive the cappings. The drippings—always the finest honey—run into the lower can, from which it can be drawn off through the ordinary honey-gate. Height, as shown, 35 in.

This machine is also invaluable for making sugar syrup by the percolator plan, for feeding.

Spread over the wire cloth a thickness of muslin; over this a cotton batting evenly distributed,

about an inch thick, and over the whole another thickness of muslin. Now pour in sugar and water in equal proportions by measure, and the next morning you can draw off syrup from the lower can just right for feeding, without any fussing to heat over the good wife's stove.

COMB-BUCKET.

Price, for L. fr., \$1.25. Holds six loose or five Hoffman frames, secure from dust or robbers, and catches all the drip. It will be found to be especially valuable when extracting. In it the combs, secure from robbers, may be carried from the hive to the extracting-house.



FIG. 37.

WAX-EXTRACTORS.

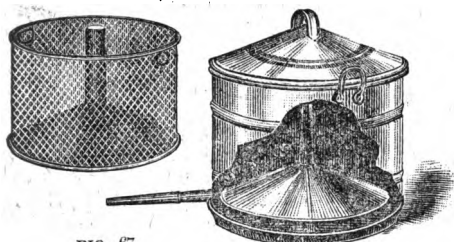


FIG. 67.

Root's Improved Swiss Wax-extractor.

Price \$2.50. With steam-generator, \$8.20.

This is a very simple machine, for you have only to throw the refuse comb into the basket and set it inside the can. Now put on the cover, and place it over a pan or kettle of boiling water; the steam will ascend all around the basket, and the melted wax will run down and flow out of the tube. Under the end of this tube is kept a can to catch the wax. As fast as the comb sinks down, more can be put in, and so on. If you have no kettle that is 12 inches across the top inside, we can furnish a copper-bottomed steam-generator. Weight 20 lbs.

Doolittle's Solar Wax-extractor.

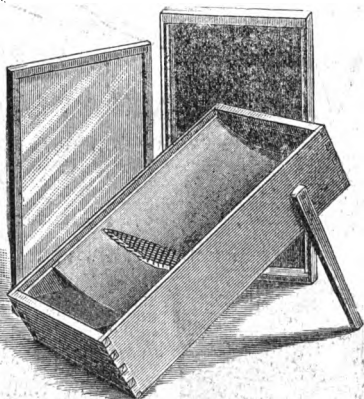


FIG. 68.—Price \$3.00. Weight 30 lbs.

One of the indispensables nowadays of a well-regulated apiary is a solar wax-extractor. A good one will more than pay for itself in one season. Bits of wax and small chunks of comb honey, that *somehow* will accumulate while working with the bees, would ordinarily be thrown away; but if you own a solar extractor you will, on your way to and fro through the apiary, just drop them into it, "because it is so handy—right in the center of the apiary, working for nothing and boarding itself." Your wife will be pleased, for her stove and kitchen won't have to be soiled again. And then, too, wax melted by sun heat will bring a higher price, because the action of the sun is to *bleach* as well as melt it; and you will find it of a beautiful yellow color when cold. In the process of melting, the honey and wax will melt together, the latter will harden into a cake, and the former will be found beneath. Such honey is impaired in color and flavor somewhat, but it is just as good for feeding to the bees. In fact, this method of extracting the honey from the wax was the only one used by the early California bee-keepers.

Directions.

Remove the cover and incline the box toward the sun, by the legs, as shown in the cut. As long as the sun shines it is ready for business. As the wax melts it gradually runs down through the incline, through the wire screen, into the pan, which has sloping sides. If the pan is greased, the wax will easily drop out—a nice merchantable cake if no honey was previously in the wax. To clean, make a paddle out of a shingle, with a square end. Toward night scrape out the dirt and leavings from the wax, and store it in a closed box, to be afterward treated by sulphuric acid, as described in the ABC (see BEE-BOOKS). Ordinarily,

incline the box as shown, directly toward the south. It will not be necessary to point it toward the sun every hour or two. *Always keep the glass clean.*

To melt up old combs, we recommend first pulverizing them in cold freezing weather, when they will break up easily. In this way the wax is freed better from the cocoons.

Boardman's Solar Wax-extractor.

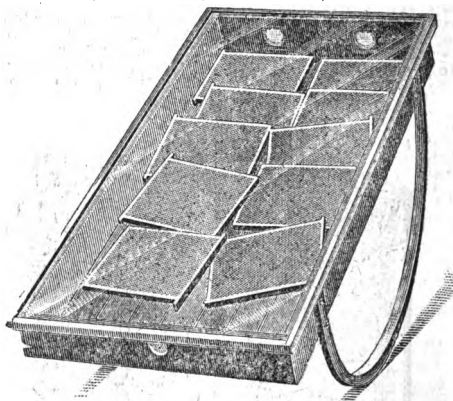


FIG. 69.

Price complete, with glass, \$6.00; weight 110 lbs.; without glass, \$3.50. Full directions with each one.

Where there is very much rendering to do, such as the melting-up of a lot of combs, we advise the use of a larger solar extractor. The one above illustrated takes a single sheet of double-strength glass, 26x60 inches, mounted in a removable sash, the edges of which overlap enough to shed water. The box is made of matched pine, and painted black to draw the heat. A sheet of iron covers the bottom. It is mounted on rockers, not only to make it portable, but to permit of its being tilted at any angle to the sun. This machine has been thoroughly tested by Mr. Boardman and ourselves, in melting up hundreds of old combs; and in any apiary where there is much wax refuse to be converted cheaply into wax, we recommend it in preference to any other. It may also be employed in evaporating down extracted honey. The ventilators in this case are opened at each end.

PERFORATED ZINC.

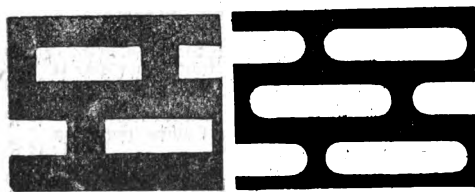


FIG. 32.—Root Zinc. FIG. 32 1/2.—Tinker Zinc.

This is used between the upper and lower stories to prevent the queen from going above. It is also used in entrance-guards, for queen and drone traps, etc. The size of the perforations in either make of zinc is $\frac{1}{16}$. This is found to effectually stop all queens and drones from passing through, but allows the workers to pass easily without hindrance.

The Tinker zinc is very much better and more accurate than the Root. It has over forty per cent more perforations to the square foot, and each hole is like every other, because every hole is made with the same punch and die, while in the Root zinc-machine there are 70 punches, and a slight variation in size.

Price List of Perforated Zinc.

Root zinc strips, 1 row holes, $\frac{1}{4}$ x 18 x 19 $\frac{1}{2}$, per 100, 80c.
Tinker zinc strips, 2 rows holes, $\frac{1}{4}$ x 18 x 19 $\frac{1}{2}$, 100, \$1.20.
Root zinc sheets, 24 x 96 inches, each \$1.20.
Tinker zinc sheets, 24 x 38 or 40 inches, each 80c.
Cut pieces of Root zinc, 8c a ft.; Tinker zinc, 12c a ft.
By mail, 10c per ft. or 1c each for strips extra.
Tinker zinc, drone-excluding but not queen-excluding, furnished at 15c per foot, or 75c per sheet..

Bee-entrance Guards of Tinker Zinc.

Price 10 cts. each, 10 for 80 cts., not prepaid. Postage extra 5 cts. each. They are regularly furnished 12 inches long, to fit between the side rails of the eight-frame bottom-board. We can also supply them 14½ inches long, to fit the ten-frame hives, at same price, when so ordered. Old-style guards of Root zinc supplied at 50 cts. for 10, but we can not recommend them in comparison with the improved ones of Tinker zinc.

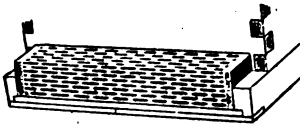


FIG. 33.

These guards have been greatly enlarged for 1898, so that now they afford about three times the ventilation of the ones sold last season. The use of

Tinker zinc and the enlarged capacity will obviate to a large extent clustering out caused by our old guards.

When in use they are placed in front of the entrances for various purposes. They may be used in swarming time to prevent the queen from going out, or on the hive whose drones are not such as one wants to breed from during queen-rearing. They may be used for ridding the hive of undesirable drones by placing on the hives and shaking all the bees in front, allowing the workers to pass in, while the drones are left on the outside and then destroyed. Be careful, however, to see that the queen is safe.

Alley's Queen and Drone Trap.

Price 50 cts.; 10 for \$4.00; by mail, 15 cts. each extra.

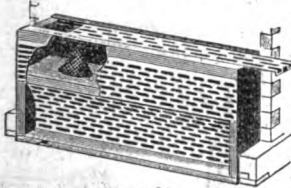


FIG. 34.

This has been improved, and made long enough to reach clear across the entrance of the eight-frame Dove-tailed hive, and Tinker zinc used in place of the Root, in the lower part of the trap to give more ventilation and freer passageway for the bees.

Two cones are now used instead of one, and perforated zinc is inserted in the back, let in a bee-space from the surface which rests against the hive front. The perforated zinc in front extends nearly to the top of the trap, so that loaded bees may pass through the lower part of the trap into the hive; or if they should happen to alight upon the zinc, in front of the upper compartment (which they are liable to do during the height of the working season), they can pass onward through the zinc in the back, and into the hive. This trap embodies all the latest improvements made by the inventor, Mr. Alley, and leaves but little to be desired. Directions for use are attached to each trap.

It is designed to automatically catch and cage the drones in an apartment by themselves. They can then be carried to another apiary, or be destroyed, as circumstances require. The trap will also catch the queen when a swarm issues, and hold her confined until the apiarist can give her his attention. As she can not get away, the bees will in all likelihood return into the hive. Or if you happen to be on hand when the swarm comes out, the trap with the queen can be placed among the flying bees. The latter will probably cluster about the queen, and they may then be hived.

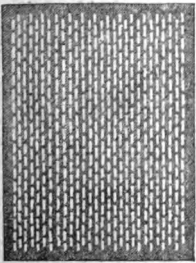
Honey-boards.

FIG. 35.—Nos. 1, 11.

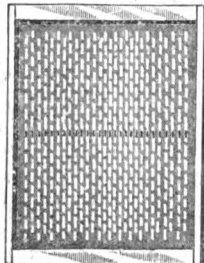


FIG. 36.—Nos. 2, 12, 13.

Honey-boards are used either for preventing burr-combs, or for excluding the queen from the surplus-

honey apartment. Almost any of the honey-boards we offer will answer the purpose of preventing burr-combs; but if brood-frames are used with top-bars 1½ in. wide and about ¾ to 1 in. thick, with a bee-space of ¼ inch and not more than ⅜ in., a honey-board will hardly be necessary for the purpose of preventing burr-combs. Their chief use is for confining the queen in the brood-chamber, and we have had many testimonies from large bee-keepers of their value for this purpose, particularly for extracting. There are various styles of boards used for this purpose. The plain unbound zinc boards shown in Fig. 35 are laid directly on the frames, and the bees pass through the openings over the spaces between the frames. With wide and thick top bars this hinders to a considerable extent the free and easy passage of the workers to the upper story. The wood-bound zinc boards shown in Fig. 36 support the zinc a bee-space above the frames, which is much better in most cases than placing it directly on the frames, because it leaves all the holes in the zinc free for passage. The zinc is liable to sag down and reduce the space to less than a bee-space. Besides, both the above styles are objected to by some because they are all metal, and therefore repel the bees from passing through it freely. Perhaps the most satisfactory board, all things considered, is the wood-zinc shown in Fig. 64, made up of strips of Tinker

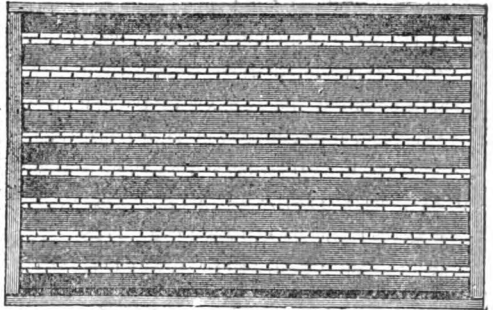


FIG. 64.

zinc having two rows of holes, slipped into grooves in the wooden slats in such a way that the edge of the hole in the zinc comes close to the edge of the wood slat, allowing the bees to pass through freely, while scarcely touching the cold metal with their feet. For the unbound and wood-bound zinc boards the Root zinc answers very well; but for the wood-zinc, the Tinker zinc is the most satisfactory, for the reason above stated and the fact that in the strip of Root zinc we can secure only one row of holes, which does not allow a sufficiently free passageway.

Price List of Honey-boards.

R before the number indicates Root zinc, and *T* indicates Tinker zinc. Order by number and name, and carry out the price.

No.	Name and Size.	Price of 10.	Weight of 10.
R 1	10-frame unbound zinc, 14x19½.....	\$1 20	9 lbs.
T 1	10-frame unbound zinc, 14x19½.....	1 80	9 lbs.
R11	8-frame unbound zinc, 12x19½.....	1 00	8 lbs.
T11	8-frame unbound zinc, 12x19½.....	1 50	8 lbs.
T 9	8-frame wood-zinc, 13½x20.....	1 80	13 lbs.
T10	10-frame wood-zinc, 16x20.....	2 00	14 lbs.
R12	10-frame wood-bound zinc, 16x20.....	1 50	11 lbs.
T12	10-frame wood-bound zinc, 16x20.....	2 00	11 lbs.
R13	8-frame wood-bound zinc, 13½x20.....	1 30	10 lbs.
T13	8-frame wood-bound zinc, 13½x20.....	1 80	10 lbs.

Less than 10 boards furnished at same rate. Nos. R9 and R10 furnished, when wanted, at 5c each less.

Nos. 1 and 11 are used inside the hive, their outside dimensions being the same as the inside dimensions of hive less ¼ inch, and they have no bee-space.

Nos. 9, 10, 12, and 13 reach to the outside edge of the hive, and have bee-space one side only.

For unbound Root zinc honey-boards larger in size than No. R1, add 20c for setting the machine; then for each additional inch or fraction thereof in width, add 1c each; longer than 19½, and not over 21 inches, add 1c each; longer than 21, and not over 22½ inches, add 2c each; longer than 22½, and not over 24, add 3c each. For larger sizes of Tinker zinc unbound boards than 14x20, add 1½c for each inch or fraction in width, and 1c for each inch in length. For less than 25 pieces, add 25c for setting the machine.

SMOKERS.

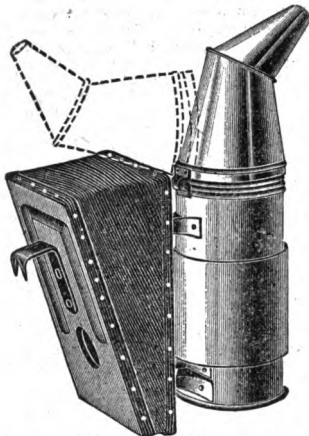


FIG. 76.—Cornell Smoker.

that the curved snout will fall back squarely in position. The legs are of light skeleton malleable iron, and are riveted to the fuel-chamber and bolted to the bellows, making it impossible for any thing to get loose. The shield is plain, with an air-space all around between it and the cup. The blast is the well-known Cornell principle, involving the use of a supplementary tube to increase the volume of air; and while it does not have quite the strength of the Crane smoker shown below, it is strong enough for all general purposes; and on account of its simpler form, and the absence of working parts, it is preferred by many. The grooves in the bellows-boards afford an excellent grip to the smoker while in use, and the galvanized hook is a real convenience, as the smoker can be hooked on to the hive right side up, ready for use and always in sight.

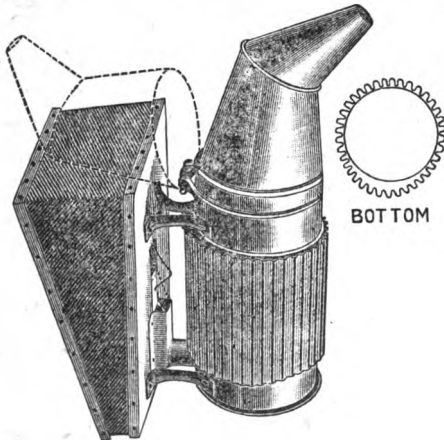


FIG. 75.—Crane Smoker.

Price \$1.25 each; 6 for \$6.00; postage, 25c each extra. This is made on the same general lines as the Cornell, as above described. The size of the cup is 8½ inches, has curved nozzle, hinged so as to swing back for replenishing; legs of skeleton malleable iron secured by bolts; shield corrugated; in fact it has just the same castings, fire-cup, nozzle, and all, as the Cornell; and it is a little more expensively made, having a little better finish. The shield of the Cornell is plain, while that of the Crane is corrugated. The special feature of this smoker is the check-valve arrangement—an invention of Mr. J. E. Crane, by which the full power of the bellows is secured without the possibility of smoke getting back; and, without a doubt, it has the strongest blast of any smoker in the market—a feature that is invaluable in forcing bees out of supers. Although not shown, the Crane has the grooves in the bellows boards and the hook, as shown in cut of the Cornell.

Price 75c, 6 for \$3.60; sent by express or freight with other goods; postage, 25c each. Just the thing for those who want a first-class reliable smoker at a medium price. It is of good capacity, 3½-in. barrel, strongly made, well finished. The top is hinged so that it can be thrown back—see dotted lines in the cut—and the fire-cup replenished with out burning the fingers. The hinge is of light malleable iron, and the working parts are milled to an exact fit, so

Clark's Cold-blast Smoker.

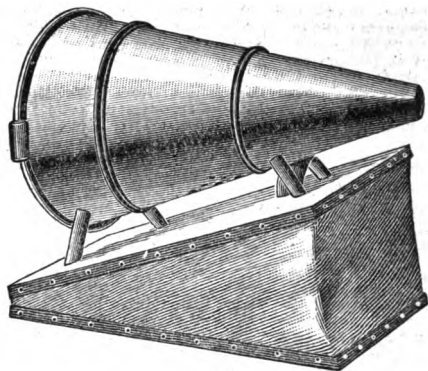


FIG. 77.

The Clark cold-blast smoker is cheap in price. It is a breech loader, and therefore is easily replenished by simply revolving the sliding door. It is easily lighted with a match. While it is a trifle cheaper than our direct-draft hot-blast Cornell, it does not begin to be as effective. Better pay a little more and get the Cornell.

Price List of Clark's Cold-blast Smoker.

50 cents each; 5 for \$2.00.

Postage 20 cts. each extra.

Five, in a basket, by express, weigh 7 lbs.

Bingham Smoker.

This is strong, well made, does not clog up, and burns any fuel. It has recently been improved by the addition of a curved snout to prevent fire dropping, and a safety attachment to prevent burning the fingers in removing the hot cone for replenishing. The four larger sizes have wide shields; the two smaller have narrow shields. All have wire handle to cone, and inverted bellows.

Be sure to add the postage to the price when you order smokers sent by mail.

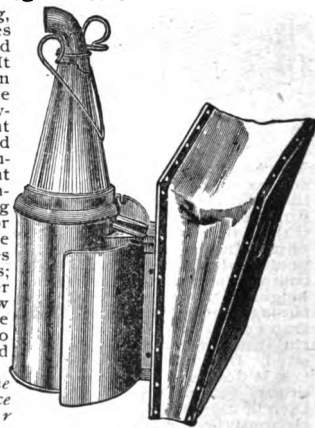


FIG. 78.

Price List of Bingham Smokers.

Name.	Size of barrel.	Postage.	Price of	
			1	6
Smoke Engine.....	4-inch.	25	\$1 25	\$6 50
Doctor	3½ "	25	85	4 50
Conqueror	3 "	25	75	3 25
Large	2½ "	20	70	2 50
Plain	2 "	15	55	2 40
Little Wonder	2 "	10	50	2 25

RUBBER GLOVES.

While we sell large quantities of these, we can not consistently recommend them for handling bees, for we consider the naked hand better for working among the bees than any covering that can be devised for it. We can furnish a good article, well worth the money for other purposes, as follows:

Price List of Rubber Gloves.

Ladies' sizes, Nos. 6, 7, 8, and 9.....\$1.35; postage, 5c.
Gents' sizes, Nos. 10, 11, and 12..... 1.45; " 5c.
Extra long driving, Nos. 13 and 14... 1.70; " 10c.

Mark size of hand on sheet of paper when ordering. If you order by number, remember that in rubber you need two sizes larger than you wear in kid; i. e., if you wear No. 6 in kid you will need No. 8 rubber.

BEE-BRUSHES

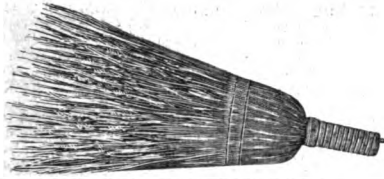


FIG. 80.—Coggshall's Bee-brush.

Price 15c; postpaid, 6c extra.

This is a sort of whisk-broom especially adapted and made for brushing bees. The strands are thinned out, and longer, so as to give a soft, pliable sweep to the combs. For the wholesale brushing of bees off combs in extracting, we do not hesitate to pronounce this the best. It is used and recommended by that extensive and practical honey producer, W. L. Coggshall, whose annual crop is several tons.

Davis Brush.

Price 15c each; postage, 3c each extra.

We much prefer the Coggshall brush, but we can furnish the Davis, either bent or straight handle.

TENT FOR SETTING OVER A HIVE.

Price \$1.50. Weight 6 lbs.

These are for the purpose of enabling us to go on with such work as introducing queens, transferring, etc., when robbers get so troublesome that we could not go on with work otherwise. After the middle of July we are obliged to use them almost constantly in our apiaries, and we could not possibly get along without them. They are made so as to fold up and put away, or for transportation, and weigh only about 6 lbs. all complete. The dimensions of the tent are 5 feet long, 5 feet wide, and 5 feet high.

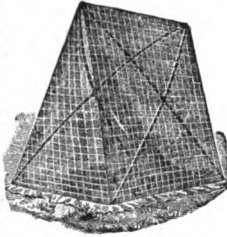


FIG. 70.

MANUM'S SWARM-CATCHER.

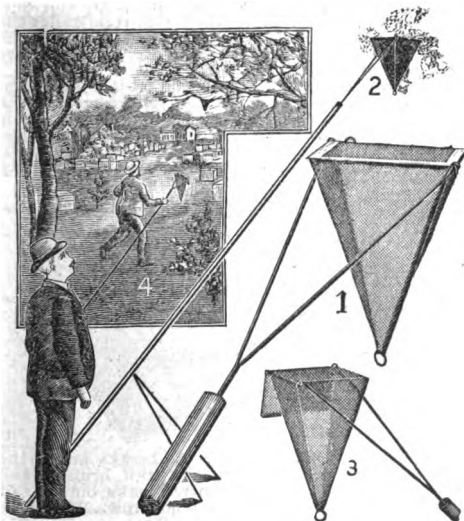


FIG. 71.

Price, with pole, \$1 00; without pole, 75c.

We have tested and examined many swarm-catchers, but have never found any thing that would begin to compare with the Manum. It is simply a wire-cloth basket with a lid to close it. To have a swarm whose queen is at large with the bees, open the basket as shown; push it up around the cluster of bees, jar the latter off the limb, and close the lid by raking it against a lower limb so as to throw it over on top. Half or two-thirds of the bees will be in the basket. Adjust the legs of the tripod so that the basket will be

suspended in the air where the bees are flying the thickest. They, attracted by the bees inside, will cluster on the outside of the basket. While the bees are clustering, prepare the hive, if you have not already done so. This done, go back to the catcher, which you will find has caught all the bees. Very gently lift up the two front legs of the tripod, fold them against the main bar, and then carry the whole to the empty hive; invert the basket, and dump. Close the hive, and the hiving is done. This device will reach a swarm 20 feet from the ground; it is light, and easily handled. After the bees are once in the basket they can not escape, and the prisoners will draw the others. The great feature of the device is, that it will stand alone, and hold the basket where the bees are flying the thickest, without any one holding it, while the apiarist in the meantime is preparing a hive elsewhere.

VEILS TO PROTECT THE FACE.

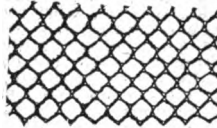


FIG. 72.

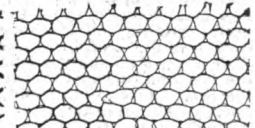


FIG. 73.

Our veils each contain 1½ yards of the best material for the purpose. They are well made with rubber cord in the top to fit around the hat, and the lower edge is bound, to prevent fraying. Three kinds of material are used. Figures 72 and 73 show the silk and cotton tulle, or brussels netting, as it is sometimes called. The silk tulle before the eye is as near invisible as anything made, and it is also strong, and will wear well if used just before the face. Mosquito-bar is also used in cheap veils, but it does not wear well.

A veil made entirely of silk tulle weighs only a fraction of an ounce, can be put in the vest pocket, and is the coolest and easiest veil of all to wear.

The hat shown in Fig. 74 is a light cloth, with wire in outer edge of brim, and rubber cord in inner edge, making it adjustable to any size of head.

The higher-priced veils are, of course, the best, but we can suit the pocket-book of all. Our choice is in the order given.



FIG. 74.

Price List of Veils and Material.

No. 1 veil, made entirely of silk tulle.....	80c
No. 2 veil, cotton tulle with silk tulle face	50c
No. 3 veil, cotton tulle throughout	40c
No. 4 veil, of mosquito-bar entirely	25c
Bee-hat, flexible rim, fits any head.....	25c
Silk tulle, 24 in. wide (8 yds. weigh 1 oz.) per yd.....	50c
Cotton tulle, 24 in. wide (post. 2c per yd).....	20c
Mosquito-bar, 66 in. wide, per piece of 8 yds.....	50c
Silk tulle, for face of veil, 9x12.....	10c

Veils and silk tulle sent postpaid at above prices.

Postage on full piece mosquito-bar, 15c.

Globe Bee-veil.



Five cross-bars are riveted in the center at the top. These bend down and button to studs on a neck-band. The bars are best light spring steel. The neck-band is hard spring brass. The netting is black cotton tulle, with face-piece of silk to see through.

It is easily put together, and folds compactly in a case 16x7 inches—the whole weighing but 5 ounces. It can be worn over an ordinary hat; fits any head; does not obstruct the vision, and can be worn in bed without discomfort. It is a boon to any one whom flies bother, mosquitoes bite, or bees sting.

By mail for \$1.00. Extra nets 50 cts. each.

Porter Bee-escape.

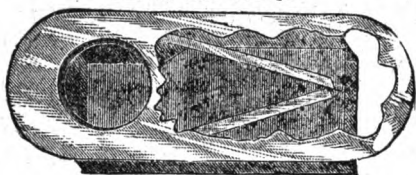


FIG. 81.

Price 20 cts. each; \$2.25 per dozen, prepaid.

Price with board 85 cts.; \$3.20 for 10, not postpaid.

No well-regulated apiary can afford to be without bee-escapes any more than it can afford to be without a bee-smoker. We have investigated a great many different forms of escapes, but after experimenting and testing them all we have come to the conclusion, like everybody else, that the Porter is very much the best. In taking off the honey it is the greatest labor-saver that has been introduced in late years. It avoids "breaking the back" in shaking heavy supers to get the bees out; does away with the cruelty of smoking the bees, and the uncapping of the honey attendant upon such a procedure; there is no need of receiving a single sting, and robbers stand no show whatever. If there are any broken burr-combs they are cleaned up by the bees *inside* of the hive before the honey is removed. All that is necessary is to slip an escape-board between the super and brood-nest or main part of the hive (say toward night), on each of the colonies from which you desire to remove the honey. The next morning you can take the supers off the hives practically free of bees without disturbing the colony below, and, in fact, without using even smoke. To save lifting the full weight of the super, proceed in this way: Break the propolis connection and lift up one end of the super; blow a little smoke into the gap thus made, to drive back the bees, and then tilt the super up on the hive, at any angle, say of about 45 degrees. Now shove the escape-board under as far as you can; let the super down gently, then slide both super and board squarely over the hive, and thus avoid lifting.

Porter Escapes for Honey-houses.

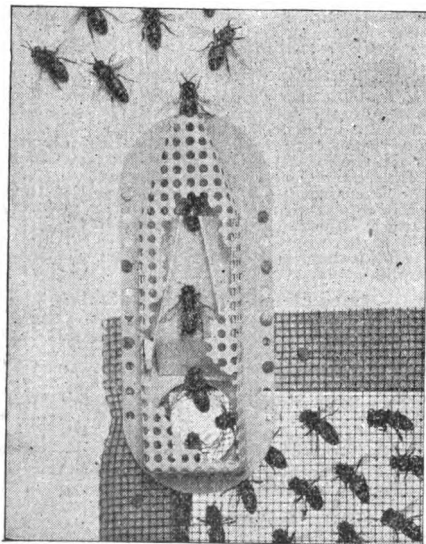


FIG. 82.

Price 25 cts. each; \$2.75 per dozen, postpaid.

The escape shown at the top of the column is designed to be used in the hive, but the one above is especially made for use on doors and windows of workshops or extracting-rooms or other places where bees get in, and it is desirable to get them out without the possibility of their returning. No extracting-room will be complete without one or more of them.

Some bee-keepers prefer to take off several supers full of bees and stack them up seven or eight in a pile; on top of this is put an escape. The honey-house escape mounted in a board is just the thing for this.

SHIPPING-CASES.

Having secured a fine crop of honey, it is sheer folly to put it in poorly made shipping-cases, such as your local planing-mill ordinarily turn out. Cases of this kind as a rule knock off anywhere from one to two cents per pound from the honey when it reaches the market. Such a policy is "penny wise and pound foolish."

We have personally visited some of the best markets for honey in the world and know exactly the requirements in the way of shipping-cases for comb honey. The stuff we use in our cases is all planed, and cut smooth and accurate.

No-drip Shipping-cases.

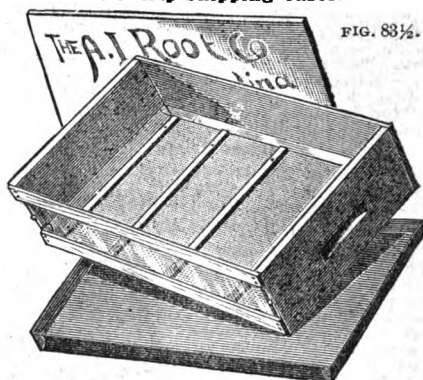


FIG. 83 1/2.

With each case we send two sheets of paper—one a little larger than the inside dimensions of the case. This is folded up into a paper tray as shown, and its purpose is to catch the dripping honey. Dripping shipping-cases will usually bring a cent or two less a pound. This, of course, comes out of the producer. The paper tray is inserted in the bottom of the case, and strips of wood (furnished with the cases) are laid in crosswise of the case, 4 1/4 inches from center to center, and nailed down with the small staples included. When the sections are in the case this leaves a space under them so that, if there is any drip, it is caught in the tray, leaving the *other* sections high and dry. Without the strips of wood, the honey runs under the sections and sticks them to the paper like so much glue. The smaller sheet is spread over the top before nailing on the cover.

When casing comb honey for market it is important to put thin strips of pasteboard or veneer between the rows of sections, as shown in Fig. 84 1/2. While this is important with all styles of sections, it is especially so with the plain sections where the combs come much closer together. Without these division-strips it very

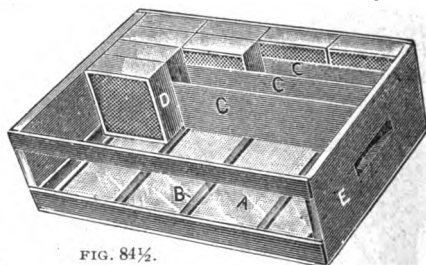


FIG. 84 1/2.

often happens that when a comb breaks out of the section it falls against that next to it, bruising and spoiling it, and not infrequently breaks out two or three with it, and sometimes a whole row. With these division-strips the injury in most cases is confined to the one section broken. Where the comb is well built out to the section on all four sides there is not the same danger of breakage as in the case of sections where the comb is poorly fastened. We will furnish the sliced-wood division-strips only when called for. They will be 3 inches wide for the 4 1/4-inch section, and the right length for 2, 3, and 4 row cases, at \$1.00, \$1.50, and \$2.00 per 1000 respectively.

How to Ship Comb Honey.

Never think of shipping your cases of nice comb honey in small lots unprotected, for they are almost

are to go through in a broken or damaged condition. The cases of comb honey should always be crated something as shown below; and in the bottom of the crate, under the honey, should be a quantity of loose straw, the purpose of which is to act as a cushion. Honey put up in this way can go by freight, and is rarely if ever broken in transit.

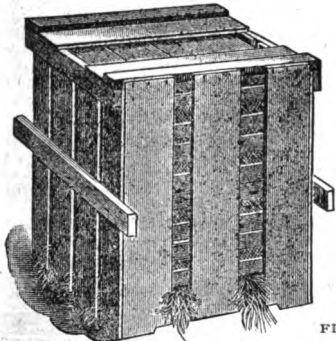


FIG. 85½.

Our shipping-cases are put up in the flat in a crate of this description. This crate will hold fifty 24-lb. shipping-cases in the flat, or eight of the same filled with comb honey; or it will hold 100 two-row 12-lb. cases, or 16 of the same when filled with comb honey. In the latter cases, handles are nailed on the side to insure careful handling. Additional comb-honey crates in the flat, 80 cts. each, or \$2.50 for 10.

Where to Ship Honey; Irresponsible Commission Houses.

Better by all means sell around home. If your own market is glutted, and you must find a new one, never ship to an unknown firm, even if they do talk extravagantly about their bank references, their large prices, and liberal advances. Some bee-keepers have found out to their sorrow during past seasons that, if they secure any returns at all from such concerns, the prices will be about a half or even a quarter of what they would have been if the honey had been shipped to reliable houses. If they had taken a bee-journal, as GLEANINGS IN BEE CULTURE, they might have saved this loss. If you do not know the firms, write to us and we will give you the best information at our disposal.

Honey-leaflet, "Food Value of Honey."

If you have not seen a sample of this leaflet, send for it. It should be distributed broadcast everywhere, as its influence is to increase the consumption of honey. Ask also for a leaflet "Peddling Honey Made Easy." Both of these will greatly assist you in disposing of your honey in the home market.

Shipping-cases.

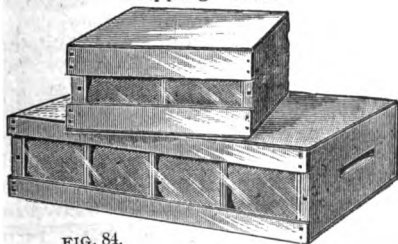


FIG. 84.

The single-tier shipping-cases are used now almost exclusively. While we can furnish the double-tier when called for, we would strongly advise taking the regular goods; for in such, as a general rule, better prices are secured. The sizes used most largely are 24-lb. single-tier, 4-row; 12-lb. 2-row, and 12-lb. 8-row. All our cases are put up in the flat in crates that may also be used for

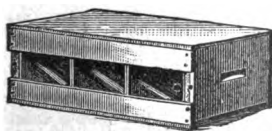


FIG. 85.

shipping comb honey. See Fig. 85½.

Notice.—In making your order for 12-lb. cases, be sure to specify whether you want them 2 row or 3 row.

Price List of Shipping-cases.

The new plain sections 4½ square and the tall sections will make it necessary to furnish a larger variety of sizes to meet all demands. The regular 24-lb. case will hold 32 of the 1½-inch plain sections without division-strips, but as the markets are used to 24 lbs. to the case it will be necessary to have a narrower case to hold 24 of the 1½-inch plain sections. The old 20-lb. case will hold 24 of the 1½-inch plain with division-strips. The old-style, 18-lb. 2-row case will hold 20 of the 1½-inch plain with division-strips, and the 12-lb. 2-row will hold 18 without division-strips. The 12-lb. 8-row will hold 15 of the 1½-inch with division-strips. Two new sizes will be needed, both 2 and 3 row, to hold 12 of the 1½-inch sections besides the various sizes needed for the 8½x5x1½ and 4x5x1½. It will be necessary to change the method of designating cases by the number of pounds it will hold because they hold a different quantity, according to whether you use the bee-way or plain sections. We have decided to designate the cases by the number of rows of sections and length of each row in inches. For instance, the regular 24-lb. single-tier case will be a 12-inch 4-row case, and the 12-lb. 2-row will be a 12-inch 2-row. The 12-lb. 8-row will be the 8-inch 8-row, etc. It will be necessary also to designate the size of sections they are to be used for in addition, if for other than the 4½-inch, which is still the regular size. Cases will be sent for this size unless otherwise specified. As we can secure 2-inch strips of glass very much cheaper than 3-inch, we offer cases for 4½-inch sections with either width glass or without any glass. Three-inch glass shows off the honey to best advantage, but many will prefer the two inch because it is cheaper. Unless 3-inch is especially called for, or the price does not indicate that that size is wanted, we send 2-inch. Nails, paper, and drip-strips are always included unless otherwise ordered.

NAME AND SIZE OF CASE.	Price, each, Nailed, each			Price, complete including 8-inch glass 1 side, nails, & paper, in flat.		With 2-inch glass instead of 8, per 100.		Without the glass per 100.		Wt. per 100—in lbs.
	1	10	100	1	100	1	100	1	100	
12-in. 4-row for 4½ in	20 18	150	\$13 00	\$11 50	\$10 00	\$10 00	450			
10-in. 4-row	18 15	140	12 00	10 50	9 00	400				
12-in. 2-row	12 10	90	7 50	6 75	6 00	225				
12-in. 2-row	12 10	90	7 00	6 25	5 50	200				
16-in. 2-row	14 12	100	8 50	7 75	7 00	300				
16-in. 3-row	12 10	90	8 00	7 00	6 00	225				
8-in. 8-row	12 10	90	7 50	6 50	5 50	200				
6½-in. 3-row	12 10	90	7 50	6 50	5 50	200				
7½-in. 4-row for 4x5...	18 15	130	11 50	10 00	9 00	300				
7½-in. 8-row	18 15	130	11 50	10 00	9 00	250				
6-in. 4-row for 3½x5...	20 17	130	11 00		7 00	350				
8-in. 8-row	12 10	90	7 50		6 00	200				

Sliced-wood veneer division-strips 3 inches wide, about ½ inch thick, 2-row (8½-inch), \$1.00 per 1000; 3-row (12½-inch), \$1.50 per 1000; 4-row (17-inch), \$2.00 per 1000. These should always be used in cases with plain sections.

Excepting the last five cases in table the above cases are all for sections 4½x4½x2, with a ½-inch follower, so that sections of any width may be used in the same case by wedging behind the follower with folded newspapers or other material.

Those using only one width of sections who prefer may have cases made for that width in lots of 5 and upwards at regular prices, direct from factory. In ordering designate the width of case in inches and number of rows of sections.

Write for prices of cases for other sized sections.

Price List of Glass for Shipping-cases.

Size of Glass.	Price.		Bx. of 50 ft. No. Price.
	10	100	
8x17½ or 18 for 4-row cases.....	30	\$2 50	133 \$3 00
8x13 or 13½ for 3-row cases.....	25	2 00	183 3 00
8x9 for 2-row cases.....	15	1 25	267 3 00
2x17½ or 18 for 4-row cases.....	15	1 25	200 2 00
2x13 or 13½ for 3-row cases.....	10	1 00	275 2 00
2x9 for 2-row cases.....	10	75	400 2 00
8x16½ or 17 for 4-row 4x5 cases...	30	2 50	140 3 00
8x15 for 4-row 3½x5 cases.....	25	2 00	160 3 00
8x12 for 3-row 3½x5 cases.....	20	1 75	200 3 00

Most of the 2-inch glass is double-strength, requiring a wide groove in the glass strips to receive it.

We take special pains to pack glass for safe shipment, and can not be responsible for breakage.

Glass strips in cases are grooved, not rabbeted, so that they will hold glass if broken in pieces not too small.

PASTEBOARD BOXES OR CARTONS.



FIG. 86.

Bee-keepers are realizing more and more the value of these cartons for putting their comb honey in marketable shape. Other articles of home consumption are put up in a neat attractive way, and in shape to be handed to the customer, and carried safely without wrapping. Why not sections of comb honey, especially when the cost of the boxes is so low? Cartons in stock are for 1½, 1¼, and 1⅛ sections, 4¼ inches square.

Table of Prices of 1-lb. Cartons.

NAME OR DESIGNATION.	Price	100	500	1000
1-lb. carton, plain, 1c each; 25 for 20c.....	\$	60	\$2 50	\$4 50
1-lb. carton, printed one side, one color, name blank.....		65	2 75	5 00
1-lb. carton, printed one side, one color, name and address.....		90	3 25	5 50
1-lb. carton, printed two or three colors one side, or one color both sides		1 00	3 50	6 00

If sent by mail, postage will be 2c each; or in lots of 25 or more, 1c each. All the above have tape handles. Without tape, 50c per 1000 less. The quality of the boxes is fair, being made of strawboard, plated outside. If more than 1000 are wanted, write for prices.

STURWOLD'S SHOW-CASE.

This case is 28 inches high and 20 inches square, outside measure, top and bottom. The glass of which it is made is 16x24. The case is to be set up in any grocery, drugstore, or any other place of business where you want your honey exhibited or sold. The frame is of chestnut, filled and varnished, and finished in natural grain. Price, plain, \$4.00; with name and address, \$4.50. As the glass is very apt to be broken in transit, we will ship them, if you prefer, with the glass boxed separately, at the same price. In flat, no glass or finish, \$2.00; glass included, \$3.50.

GLASS PACKAGES FOR HONEY.



Among small glass packages for extracted honey the square jars seem to be the cheapest and most popular. We handle various makes of these, as listed below, which are shipped from various points, enabling us to reach any point on special through rates of freight.

Eastern Square Jars.

These are made in four sizes, and shipped direct from New York, or Philadelphia, Pa., including corks, in full-gross lots, of a size, at following prices:

5-oz. sq. jar, \$2.50 per gross; ¼-lb., \$3.50 per gross.
1-lb. sq. jar, \$4.75 per gross; 2-lb., \$6.50 per gross.

Muth Square Jars.

These are made in four sizes, and shipped direct from Cincinnati, Ohio, corks included, in full-gross lots, of a size, at the following prices: 1 and 2 lb. are ½ gross in a box.

5-oz. Muth jar, \$2.75 per gross; 8-oz., \$3.65 per gr.
1-lb. Muth jar, \$4.75 per gross; 2-lb., \$6.25 per gr.

Pounder Square Jars.

These are made in three sizes, and packed 100 in a crate, shipped direct from Indianapolis, Ind., or Medina, O., at the following prices, corks included:

Five-ounce Pounder jars, per 100.....\$2.00.
Half-pound Pounder jars, per 100.....2.60.
One-pound Pounder jars, per 100.....3.40.

When you prefer to have any of the above jars shipped with other goods from here, add to the price 25c per gross on the 5 and 8 oz., and 50c per gross on the 1 and 2 lb. to cover freight. As all are practically the same, we will fill your order with what we have in stock unless you particularly specify the kind wanted, and will take no other. Less than original packages will be furnished as follows: 5-oz. 30c per doz., 8-oz., 40c per doz.; 1-lb., 50c per doz.; 2-lb., 65c per doz., corks included.

Mason Fruit-jars.

These are very largely used for canning fruit, and are often used for honey as well. As we buy them by the carload, we can make the following prices at Medina, all put up complete with porcelain-lined caps and rubbers, in cases of one dozen!

Pt. Mason jars, doz. 50c; 6 doz. \$2.90; 12 doz. \$5.75.
Qt. Mason jars, doz. 55c; 6 doz. \$3.10; 12 doz. \$6.00.
½-gallon same, doz. 70c; 6 doz. \$3.90; 12 doz. \$7.75.

Glass Jars, Pails, and Tumblers.

While this No. 25 jar is more expensive than a common tin-top tumbler, it is the nicest package we know of for extracted honey. It is clear flint glass with glass top and tin screw-rim and rubber ring to seal tight. We have them packed two dozen in a partitioned case ready to ship safely when filled out with honey, without additional packing. We furnish them also packed 12 dozen in a barrel.

Price 50c per 10; \$5.50 per barrel; \$1.15 per box of two dozen; 6 boxes \$6.50.

No. 43, same style, holding about 14 oz., same price as No. 25.

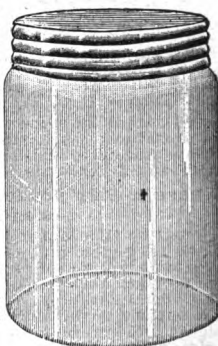


FIG. 91.—No. 25 Jar.

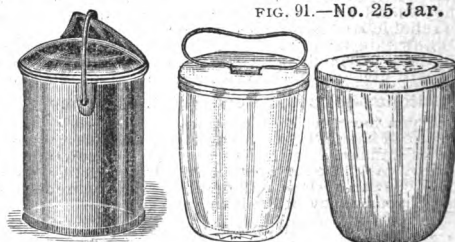


FIG. 93.

Jam-jar.

FIG. 94.

Screw-top Pail.

FIG. 95.

Tumbler.

Nos. 775 to 778. Nos. 788-9.

The jam-jar also seals with a rubber ring, and has a glass cover. The bail slides up the incline into a notch, and this seals the jar tight.

The two other styles shown are cheaper, and answer a good purpose. They have tin covers.

Table of Prices.

Please order by number and name, and give price.

Number and name.	Capacity.	Price of 10.	Barrel No.	Price
No. 788, ½-lb. tumbler.....	10 oz.	25	250	\$5 00
No. 789, 1-lb. tumbler.....	16 oz.	30	200	5 00
Nos. 788, 789, nested.....		50	200	8 70
No. 775, ½-lb. glass pail.....	11 oz.	38	250	7 80
No. 776, small pound pail.....	14 oz.	40	200	6 80
No. 777, large pound pail.....	17 oz.	50	150	6 00
No. 778, 1¼-lb. glass pail.....	24 oz.	70	100	6 00
Large jam-jar.....	14 oz.	70	144	8 00

Barrels average about 135 lbs. each in weight. The capacity as given is what each will hold, well filled with honey of good consistency.

The price of 10 is given in the second column; the third column gives the number in a barrel, and the fourth column the price of a barrel.

We can not break barrels at the barrel price.

TIN PACKAGES FOR HONEY.

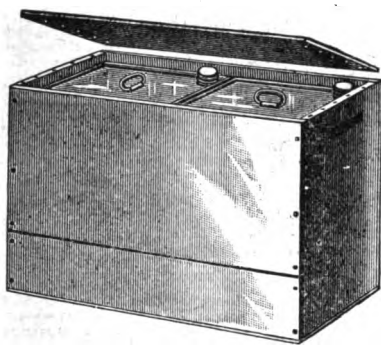


FIG. 96.—5-gal. (60-lb.) Square Cans.

The above cut shows the favorite package for shipping extracted honey. There is no shrinkage and consequent leaking, no taint to the honey from wood as is so frequently the case with barrels and kegs. The cans, being made square, economize space, and are easily boxed. They are used exclusively in the far West.

Price List of Square Cans.

No. in a box.	Capacity of each can in gallons,	in honey.	Price of 1 box.	10 boxes.	Wt. of 1 box.
1	5-gal. can boxed	60 lbs.	\$ 45	\$ 3 75	10 lbs.
2	5-gal. "	60 "	70	6 00	15 "
10	1-gal. "	12 "	1 30	12 00	20 "
12	1-gal. "	6 "	1 33	12 00	20 "
24	1-gal. "	3 "	2 10	20 00	25 "
100	1-gal. "	3 "	10 00	90 00	110 "
100	1-gal. "	6 "	8 50	75 00	80 "
100	1-gal. "	3 "	7 50	65 00	60 "

Small Lever-sole Cans.

There is quite a demand in some quarters for smaller sizes in square cans. The adjoining cut shows a one-gallon size with a 2-inch lever seal, which is superior in many ways to a screw cap. It seals tight with a rubber gasket and is never stuck so tight that you can not pry it open. It has a large opening in the form of a funnel for filling. We made a screw-cap gate adapted to this seal. We also supply the $\frac{1}{2}$ and $\frac{3}{4}$ gallon sizes either with the lever seal or 1-inch screw cap. All square cans shipped from Medina will have the 2-inch lever seal unless otherwise ordered. We can furnish the five-gallon square cans with a 4 in. screw as well as a $\frac{1}{2}$ -

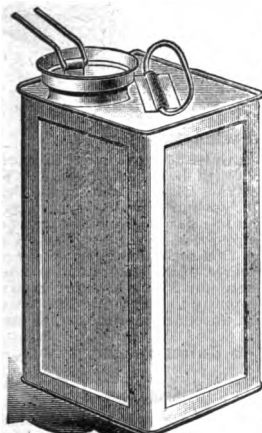


FIG. 97.

in at 5c extra each can. We can furnish these square cans direct from Chicago, Ill., or St. Louis, Mo., when so ordered, at the same price, but not with the lever seal; they will have 1½-inch screw caps.

Screw-cap Honey-gate

Price 15 cents; postage, 3 cents.
We can furnish, when desired, a honey-gate to fit either a 1½ or 1¼ inch screw-cap or 2-inch lever seal. This is a great convenience for retailing honey, as the stream can be stopped instantly.



FIG. 99.

FIG. 99. *When you order these gates separate from cans we can not guarantee a fit unless you send us a cap from the screw with the order.*

Sample Mailing-blocks

Price each, 6c; by mail, 8c.
These are small wide-mouthed glass bottles, which hold $\frac{1}{2}$ oz., with cork, put up in a mailing-block with top which screws on and is easily removed.

Price List of Screw Caps.

The following low tin screw-caps, paraffine-paper lined, are used on honey cans and pails. Other sizes can be furnished if sufficient quantity is taken.

Name and size.	1	10	100	Wt. of 10.
1½-inch screw caps.....	2	15	\$1 25	5 oz.
8 -inch screw caps.....	4	85	3 00	14 oz.
8½-inch screw caps.....	5	40	3 50	18 oz.

Jones' Honey-pails with Screw Cap.

Postage.	Capacity in pounds.	Price of 1.	Price of 10.	Price of 100.
5	1	.05	.48	\$ 4 50
8	2	.08	.75	7 00
9	2½	.09	.78	7 50
10	3	.09	.88	8 50
13	5	.10	.95	9 20
13	5	.10	.98	9 50

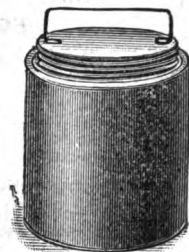


FIG. 98.

For a straight tin pail made especially for shipping honey in, these serve a very good purpose, as you can remove the honey when candied. They are not as cheap nor as handy to open as the Record lever-seal pails.

Tin Pails with Raised Covers.



FIG. 100.—A NEST OF FIVE RAISED-COVER PAIRS.

Above we give engravings of a popular style of tin pails for honey. You will observe that they are made with the intention of nesting one in the other. This saves transportation, for they go by freight, when thus nested, at the same rate as stamped ware.

Price List of Raised-cover Pails.

Size in Quarts.	lbs.	Price of			Weight of 100.	
		1	10	100		
½ quart R. C. pail.....	1½	4	\$ 38	\$ 1 80	\$ 3 20	55 lbs.
1 " " " "	2½	5	48	2 25	4 00	75 "
2 " " " "	6	7	68	3 00	5 00	120 "
3 " " " "	9	10	90	4 00	7 00	180 "
4 " " " "	12	13	1 20	5 00	9 00	150 "
½ and 1 qt. nested.....	9	8	85	8 90	7 00	100 "
¾, 1, and 2 qt. nested	15	1 40	6 00	11 50	17 00	" "
¾ to 4 qt. nested.....	35	3 00	13 00	26 00	320 "	" "

Record's Tight-seal Cover Pail.



FIG. 101.

FIG. 102

This is a very desirable pail for honey. The top of the pail is bell-shape, similar to the 2-inch lever-seal, with opening the full size of the pail. The above cut shows the manner of prying out the cover by means of the wire lever. The pail seals with a rubber gasket absolutely tight, and may be opened and closed as often as desired. The adjoining cut shows the shape of the pail. Various sizes are furnished, as in following list:

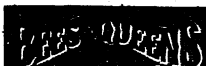
Number.	Capacity, lard — honey.		Price			Wt. 100
	1 lb.	1 1/2 lbs.	1	10	100	
No. 1 seal-cover pail.....	1 lb.	1 1/2 lbs.	6	55	5 00	45
No. 2 " " " " " "	2 lbs.	3 "	7	65	6 00	60
No. 3 " " " " " "	3 "	4 1/2 "	9	80	7 50	70
No. 5 " " " " " "	5 "	7 1/2 "	10	90	8 50	70
No. 10 " " " " " "	10 "	15 "	15	135	12 50	140
Improved Dadant pail.....	5 "	7 1/2 "	10	80	7 50	

SIGNS.

We are prepared to furnish neatly printed signs as follows:

Honey for Sale.**BEE-KEEPERS' SUPPLIES FOR SALE.****No Hunting or Shooting Allowed on this Farm.****FOR RENT.**

They are 6 in. by 2 ft., neatly printed in black on smooth white painted boards. Price 10 cts. each; or by mail, 25 cts. In quantities not prepaid we will sell 3 for 25 cts.; 6 for 40 cts.; 12 for 75 cts., or a bunch of 25 for \$1.25, all of one kind. We will furnish them, assorted kinds, as follows: 6 for 50 cts.; 12 for 90 cts.; 25 for \$1.50. We can furnish, besides, three signs, "Honey



for Sale," "Bees and Queens for Sale," and "This Property for Sale," $4\frac{1}{2} \times 18$ inches, and a sign, "This Property for Sale," 6×36 inches, all at 10 cts. each; 80 cts. for 10. The $4\frac{1}{2} \times 18$ -inch signs are available at 6 cts. extra for postage.

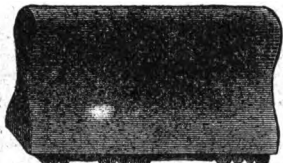
Rubber Stamps.

FIG. 105.

Many use rubber stamps for marking their shipping-cases, sections, letters, etc. Where you have a great many to mark they are cheaper and more quickly applied than labels. If you do not use printed stationery it is much better to have a rubber stamp for your name and address; then there is no chance of our reading it wrong, nor of your leaving off the name and address, as is very often done. We can furnish cheap name-stamps at 15 cts. for a single line; 25 cts. for two lines; 5 cts. extra for each additional line. Lines may be any thing up to 3 in. long. A small self-inking pad to go with it, 20 cts. Other stamps in proportion. Send for circular of rubber stamps. We make our own stamps, and can supply you promptly at best prices with any thing in the line of stamps, stencils, etc.

Honey-labels.

If only a good quality of honey were put on the market, and tastily labeled with the grade of honey, and the name and address of the producer, it would go far toward checking the impression that honey is adulterated. Some producers of comb honey mark each section with label or rubber stamp, giving name and address of producer. This creates a demand for their product, if it is A No. 1. A neat sample book of over 50 different styles of labels, with prices, mailed free on request.

Dextrine.

For gumming honey-labels and for pasting labels on wood, tin, etc.; will stick and dry instantly. This is the substance used on postage-stamps, and by express companies for putting on their labels, etc. Directions for use on each package.

Prices: 3 oz., 5c; $\frac{1}{2}$ lb., 10c; 1 lb., 15c; 2 lbs., 25c.

If wanted by mail, add 1c per ounce for postage.

Price of brush, 10c; by mail, 12c.

Stickemfast.

This is the very best thing we have ever found for sticking labels to tin so they will not come off. It has the disadvantage that it will sour after standing a day or two. It must, therefore, be prepared each time it is used. We will supply it at the same price as dextrine, including directions for preparing.

Paraffine Wax.

Price 15c per lb.; 10 or 12 lb. cakes, 10c per lb.

For coating the inside of honey-packages, such as kegs and barrels, this is fully as good as or better than beeswax, and much cheaper.

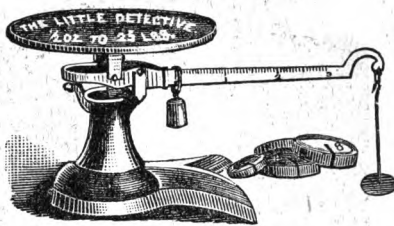
SCALES.**Little Detective Scale.**

FIG. 106.

Single beam, no scoop, \$2.00; with tin scoop, \$2.50.

Double beam, no scoop, \$3.00; with tin scoop, \$3.50.

This little scale is made with steel bearings and a brass beam, and will weigh accurately any package from $\frac{1}{4}$ oz. to 25 lbs. It is intended to supply the great demand for a housekeepers' scale. It is hardly as rapid a weigher as the "Favorite," and does not, like it, take off the tare; but it weighs a smaller quantity, does it rather more accurately, under all circumstances, and costs 50c less. Every scale guaranteed perfect. Thousands are used by postmasters.

The Favorite Family Scale.

12-lb. Favorite, \$2.50.

24-lb. Favorite, \$2.75.

Weight, boxed for shipment, about 5 lbs.

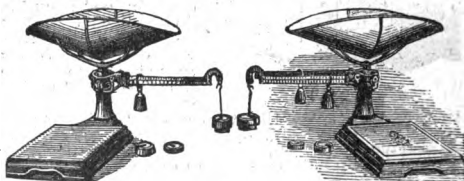
This is a beautifully finished, accurate instrument for weighing honey or anything else; and it will weigh as close as a half-ounce without any trouble. The screw for adjusting the tare is right under the platform. Two sizes are furnished, weighing respectively 12 and 24 lbs. The 12-lb. is preferable when 12 lbs. is all you want to weigh, because there is more room for the figures and divisions.



FIG. 107.

To Take off Tare with the Favorite.

Who has not felt what a nuisance it is, to be obliged to weigh the plate, pail, or dish, in which honey is wanted, and then to subtract this weight from the gross weight of the whole, without making mistakes? With the Favorite you have no subtracting to do, the scale itself doing it. Suppose a customer brings a pitcher to fill. Set it on the scale, and the pointer sinks until it tells the weight of it. Pay no attention to this, but turn the screw until the pointer again stands at 0; now you are ready to let your honey run until the pointer tells the number of pounds asked for.

240-lb. Victor Union Scales.FIG. 108.—SINGLE-BEAM
244-LB. SCALE, \$3.25.FIG. 109.—DOUBLE-BEAM
244-LB. SCALE, \$4.00.

This is a very convenient scale for family use. It will weigh from $\frac{1}{4}$ oz. to 80 lbs. in the scoop, and from $\frac{1}{4}$ lb. to 244 lbs. on the platform, which is $10\frac{1}{2} \times 13$ inches in size. The extra beam in the double-beam scale is used for taking off tare, and is quite convenient. We can recommend the make we handle to be reliable and accurate. Boxed for shipment they weigh 50 lbs. each.

800-lb. Victor Platform Scale.

Price only \$15.00.

We can furnish a platform scale on wheels, capacity 800 lbs., sold by Fairbanks, the leading scale-makers of the world. We ship direct from Cleveland, Ohio.

CEMENT-COATED WIRE NAILS.

We are now using in almost all our work what are known as cement-coated nails. They are the ordinary wire nails with a thin coat of brown substance. The friction of the nail on the wood in driving softens this coating and makes it adhere to the wood while also adhering to the nail. This makes the nail hold better than anything heretofore known. If you have ever tried to draw a rusty nail you know something how these nails hold. If you wish to investigate them we will mail a sample package of various sizes for 5 cents to pay postage.

We have been using these nails for several years, and the longer we use them the better we like them. All the hives, frames, crates, etc., which we send out in flat, requiring nails to put them together, have a sufficient quantity of the right size of these cement-coated nails included unless otherwise specified. The three smallest sizes in the following list will be smooth nails, as they can not apply the coating on such fine nails.

These cement nails hold so much better than a smaller nail can be used and have greater holding power. For instance, instead of 1½-in. smooth nails we now use 2d fine or 1-inch nails to nail up brood-frames and section-holders, and the work is stronger. On account of this greater holding power the patentees of the coating process adopted the plan of putting the same number of nails in a keg as the ordinary smooth nails will average, and make them a little scant in length and size so that a keg will be short in weight from 10 to 15 lbs., although having the same number of nails, and selling for the same price per keg. This plan made it difficult to fix a price by the pound, because kegs were not of uniform weight. Full-weight kegs of cement-coated nails cost more than the ordinary smooth nails.

Price List of Fine Flat-head Wire Nails.*Cement-coated, except first three.*

L'gth.	Wire Gauge	No. in 1 lb.	Wt. of 5c pkg.	Price of 1 lb.	10 lbs.	100 lbs.
¾ in.	No. 21	17,500	2 oz.	.25	\$2.00	\$17.00
¾ "	" 20	10,000	2 oz.	.20	1.50	13.00
¾ "	" 19	7,500	2 oz.	.15	1.20	11.00
¾ "	" 18	4,200	4 oz.	.12	1.00	9.00
¾ "	" 18	2,700	4 oz.	.09	.85	7.00
¾ "	" 18	2,350	4 oz.	.09	.80	6.50
1 "	" 18	2,000	4 oz.	.09	.75	6.00
1 ¼ "	" 17	1,200	4 oz.	.08	.70	5.50

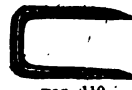
Price List of Standard (D) Wire Nails.*All cement-coated.*

Style.	Length.	Wire Gauge.	No. Nails in 1 lb.	Price of 1 lb.	10 lbs.	100 lbs.
2d fine.	1 in.	No. 17	1440	8 60	\$4 00	
3d "	1 ½ "	" 16	1000	7 55	8 70	
4d box.	1 ½ "	" 15 ½	560	7 50	8 50	
5d "	1 ½ "	" 14 ½	8 8	7 50	8 50	
6d "	2 "	" 13	250	6 50	8 85	
7d "	2 ½ "	" 12	236	6 50	8 85	
8d "	2 ½ "	" 12	157	5 45	8 25	
9d "	2 ½ "	" 12	130	5 45	8 25	
10d "	3 "	" 11	107	5 45	8 15	
4d casing.	1 ½ "	" 15	550	7 50	8 50	
6d "	2 "	" 13	250	6 50	8 35	
8d "	2 ½ "	" 12	157	5 45	8 25	
8d common.	1 ½ "	" 15	615	6 50	8 45	
4d "	1 ½ "	" 13	822	6 50	8 30	
5d "	1 ½ "	" 12 ½	214	6 50	8 30	
6d "	2 "	" 12	200	5 45	8 20	
7d "	2 ½ "	" 11 ½	154	5 45	8 20	
8d "	2 ½ "	" 10 ½	108	5 45	8 10	
10d "	3 "	" 9 ½	74	5 40	8 05	
16d "	3 ½ "	" 8	46	5 40	8 05	
20d "	4 "	" 6	29	5 40	8 00	

Price List of Tinned Tacks.

Name and size.	Wt. of 5-ct. pkg.	No. in 1 lb.	Price of 1 lb.	12 1
2 oz. tinned Swedes, ¼ inch	2 oz.	500	4000	45 35
8 " " " ¾ "	3 " "	500	2650	50 25
8 " " " ½ "	6 " "	500	1835	50 15
8 " " " ¼ "	8 " "	500	1000	55 10
¾-in. blued carpet, oval top	4 " "	250	1000	40 15

The 2 and 3 oz. tacks are used to tack wire cloth on queen-cages. The 6 and 8 oz. are used for carpet-tacks or other coarse work.

Double-pointed Tacks.

No. 11 double-pointed tacks, tinned, same size as cut. These are useful for a variety of purposes.

Four oz., 5c; 1 lb., 15c; 10 lbs., \$1.30.

FIG. 110.

Wire-cloth Staples. These are of smaller size, ¼ wide and ¾ long, just right for tacking wire cloth on to cages, screen-doors, etc., same price as above.

Crata-staples.

These are 1 ½ inches wide, with points ¾ inch long, and may be used to fasten the bottoms to hives in moving, or to mend a split in a box. Per pound, 15 cents.

FIG. 111.

End-space Staples.

For use in brood-frames as shown in Fig. 24. Four oz., 5 cts.; 1 lb., 15 cts.; 5 lbs., 60 cts.

Any of the above tacks or nails will be sent by mail at a cost of 18c per lb. for postage. If you want only a single ounce you must send 2c to pay postage. Postage on 2-oz. packages is 3c; on 8-oz. packages, 4c. The staple sizes of nails are liable to an advance without notice.

Price List of Flat-head Steel Wood-screws.

We keep in stock the following sizes of screws at the prices annexed. The price is for pkg. of 1 gross.

Length	No Price	Length	No Price	Length	No Price
¾	3 10c	1 in.	5 15c	1 ½ in.	10 25c
¾	6 12c	1 " "	6 17c	1 ½ "	8 24c
¾	8 10c	1 " "	7 18c	1 ½ "	10 28c
¾	4 10c	1 " "	8 20c	1 ½ "	10 30c
¾	7 15c	1 " "	9 22c	2 "	11 35c
¾	8 17c	1 " "	10 24c	2 ½ "	11 38c
¾	6 15c	1 ½ "	9 20c	2 ½ "	12 40c

Will break packages and send 1 dozen or more for 20 per cent advance on the above prices.

DRY GOODS.

There are various kinds of fabrics which are used more or less in bee-keeping. While many may be able to get these at their home stores to as good advantage, others may not be so fortunate. We therefore list here some of the things generally used.

Burlap.

This is used to make chaff cushions, and also for quilts to lay over the frames and Hill's device in winter.

Price per yard, 40 inches wide, 8c; 10 yds., 75c. By the piece of about 200 yards, 6c per yard. Weight, 8 ½ oz. to the yard.

Chaff Cushions.

Burlap cushions, without chaff, 15c each.

Burlap cushions with chaff, 25c each.

These cushions, unless otherwise specified, are made to fit the telescope cover on eight-frame Dovetailed chaff hives. Made to order for other-sized hives. Being quite flexible when loosely filled with chaff they will adapt themselves to hives varying quite a little from the size for which they are especially made.

Cheese-cloth.

Price per yard, 5c; by the piece (about 50 yds.), 4c.

This is for making strainer bags for straining extracted honey. It may also be used folded to several thicknesses on percolator feeders. It is also used on pan feeders as a ladder for the bees to walk on.

Cotton Cloth.

Price per yard, 6c; by the piece (about 50 yds.), 5c.

This is common unbleached sheeting, and is used to make covers for extractors and extracted-honey cans and barrels. It may also be used on percolator feeders folded to two or three thicknesses.

Duck.

This is 29 inches wide, 8 oz. to the yard.

Price per yard, 13c; by the piece, 11c.

This is preferred by some for quilts over the frames. We use it for padding around chaff-packed division-boards.

Enameled Cloth.

This is preferred by many to any thing else, for covering the frames, before the chaff cushions are put over the bees. I have seldom known the bees to bite through it, and the surface is so smooth and glossy they put very little propolis on it.

Price per yard, 45 inches wide, 25c; 12 yards, \$2.50.

If ordered by mail, 15c per yard extra for postage.

FEEDING.

Bees are fed for two purposes: To stimulate brood-rearing, or to supply them with the necessary stores for winter. For stimulating, a pint or half a pint of syrup daily, either at the entrance at night or inside of the hive, should be given until the required amount of brood is reared. In preparing for winter, it is better to give the necessary stores all at one feed. We feed anywhere from 5 to 25 lbs. at a single feed toward night.

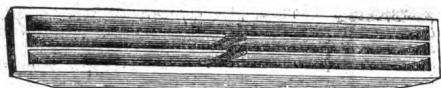
Simplicity Feeder.

FIG. 112.

This is to be filled with syrup made by mixing together granulated sugar and water in equal proportions by measure, and stirring or heating until thoroughly dissolved. This feeder may be placed at the entrance at night, over the brood-frames, by placing on top of the hive, or in the brood-nest itself, if a couple of frames are removed. A very nice way to stimulate brood-rearing for a nucleus in a full-sized hive is to set the feeder just outside of the division-board at night. Feeding should generally be done at night, so that the syrup can be all taken up and disposed of before morning.

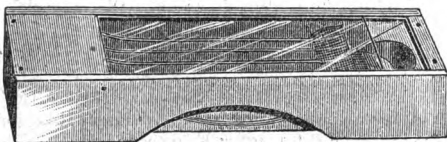
The Gray Covered Feeder.

FIG. 113.

This, as the engraving shows, is simply a Simplicity feeder arranged with a glass slide. It is designed to be placed tight up against the entrance; and, after filling, the glass is pushed back to cover up the entire feeder.

The France Pepper-box Feeder.

FIG. 114.

The pepper-box feeder which we have sold for the past fifteen years has lately been given considerable prominence as the Hill feeder. It is simply a tin can with cover perforated full of fine holes. Fill the feeder and put on the cover, then invert it quickly and place it in the hive above or alongside the frames, giving the bees access to the perforations, which are now on the under side. We furnish it in two sizes—pint and quart.

The Boardman Entrance Feeder.

This is the best and handiest entrance feeder we know of. With it, feeding can be done at any time, secure from robber-bees, and without opening the hive. It is simply shoved up close to the entrance on one side—the spurs, or projections, extending far enough into said entrance to prevent robber-bees from without from passing the guards from within. It consists of a box with a hole in the top, to receive a 2-quart Mason glass jar inverted. The feed is given out to the bees on the atmospheric principle, through the screw top. Under this is soldered a cap with a rim, so that the syrup will run out no faster than the bees can take it. As the feeding goes on, a mere glance shows just how fast the bees are taking the syrup, and when the jars will need refilling. Special caps for the Lightning jar, also furnished.

As the Mason jar is a common article in every household, and glass jars are liable to breakage, most

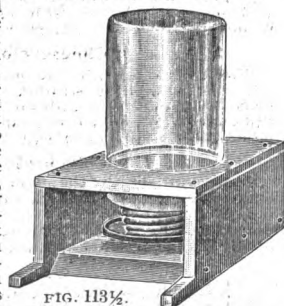


FIG. 113 1/2.

of our patrons will order only the box or lower part of the feeder with the special cap to fit the jars. Prices are made in the table in the next column with and without the jars. If you order the lower part alone specify whether you want them to fit one or two quart Mason jars or for lightning jars.

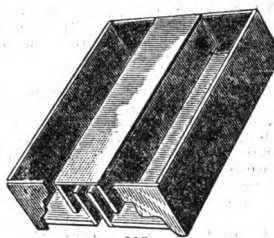
The Miller Feeder.

FIG. 115.

This is designed to be placed inside of a super, or in the upper story on top of the brood-frames. It has two compartments for syrup. The passage-way to the bees is directly over the center of the brood-nest at a point where there is the most warmth, and this makes it possible for bees to take down the syrup on cold freezing days, when

the apiarist has been so negligent as to leave this operation for the last thing. Strips of wire cloth are nailed to bottom edges of the two outside boards, forming bee-passages, so that it is impossible for bees to get into the syrup and get drowned, and yet they are enabled to take out the last drop. To feed, simply raise the cover; and if the colony needs 10 lbs. of syrup fill one compartment about $\frac{3}{4}$ full. If it needs 20 lbs., fill both compartments nearly full. The amount of stores can be quite accurately gauged on the same plan pro rata. It measures $11\frac{1}{2} \times 18 \times 4\frac{1}{4}$ inches outside, and will go inside of an eight-frame Dovetailed super or any of the hives we sell.

Complete directions for nailing these feeders, and preparing them so they will not leak, are attached to the cover of each one sent in flat.

Syrup for Feeding.

We advise only the best granulated sugar, as it makes the safest winter food, and it has been found that it contains more real sweet for the money. Cheaper sugars, sometimes such as brown or maple, or cheap molasses, may, in the colder climates, result in occasional winter losses. For warmer climates, the molasses that is made in the South will answer very well, especially if you happen to have a quantity on hand. But where you have to buy it outright we think you will find the granulated sugar cheaper in the end.

How to Make Sugar Syrup.

Mix granulated-sugar and water, equal parts of each, by measure, and stir until it is all dissolved. The best way, if you desire to make a quantity, is to pour into the honey-extractor, if you have one, the requisite amount of water. Start the reel going, and, while turning, pour in dipperfuls of sugar, one at a time. This gives the sugar, as it is poured in, time to mix with the water while it is in motion. If you make the mistake of pouring the sugar in *first*, and the water *afterward*, you will make a poor job of it. After the sugar is all in—a quantity equal to the amount of water by bulk—turn the handle for four or five minutes more, to make sure that all the sugar is dissolved. At first the mixture will look a little cloudy, as if the sugar were not all dissolved; but this milky look is due to the presence of air-bubbles, which will pass off in half an hour, leaving the syrup clear and limpid.

If you are careless enough to let your feeding go till late, use four parts sugar and three of water. It may then be necessary to turn the reel of the extractor a little longer. If you have no extractor you can use a tub or wash-boiler, and a stick to do the stirring; but it takes longer, and the work of mixing is harder.

If you desire to make only a small batch of syrup—a gallon or so—pour boiling water on the sugar, and then stir. In large batches, cold water does just as well, providing the extractor is used.


Price List of Feeders.

	Price of	Weight
	1	of 10.
	10	
Simplicity feeder	5	85 8 lbs.
Gray's covered feeder.....	15	1 80 8 lbs.
Boardman feeder, 2-qt., complete	25	2 00 20 lbs.
Boardman feeder, in the flat, without jar but with special cap.....	15	1 25 11 lbs.
Special caps only, for either Mason or Lightning jars	10	75 1 lb.
Pepper-box feeder, 1 pint.....	6	50 3 lbs.
Pepper-box feeder, 1 quart.....	10	80 6 lbs.
Miller's feeder, nailed up.....	25	2 20 40 lbs.
Miller's feeder, in flat	10	1 40 40 lbs.

QUEENS.

Grade and Price of Queens.

FIG. 120.



	December, January, February, March, April, May.	June, July, August, September, October, November.
Untested queen.....	\$1 00	\$ 75
Select untested queen	1 25	1 00
Tested queen	1 50	1 00
Select tested queen.....	2 50	2 00
Best imported queen	7 00	4 50
Fair imported queen	6 00	3 50

Full particulars regarding each grade of queens with discounts for quantity will be sent free.

CAGES FOR QUEENS.

As the Benton cage is so far superior to all others for mailing, it is the only one we offer for the purpose. We have sent queens in it to all parts of the country with surprising success, and, in the large size, have mailed queens to Australia and other distant points. To make it a complete all-round cage it only remained for us to adapt it for introducing, which, we are pleased to say, we have accomplished successfully. To introduce, all that is necessary is to pull out the cork, and the bees "do the rest," i. e., eat out the candy and liberate the queen by a well-known principle.

The three-hole principle makes the cage, to a certain extent, climatic. One of the end holes is filled with candy; the other end hole is well ventilated, while the center one receives ventilation only from the ventilated one. When the bees go over the mountains they will seek the center and warmer hole next to the candy. In hot climates they will naturally occupy the ventilated hole. Another feature of the cage is, that the holes are so small that the concussions through the mails do not jostle the bees about so much.

Small Benton Cage (two-thirds Size).

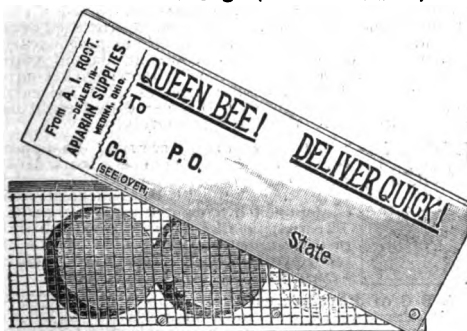


FIG. 116.

To prevent the absorption of the candy into the grain of the wood the candy-hole is lined with paraffine, and, when filled, is covered with paraffine paper. This will keep the food soft for a long period of time—a very important thing, by the way. When the candy dries up, the bees die. The cover, to insure prompt delivery, is printed in exact fac-simile of the cut. On the reverse side are printed directions that have stood the test in the filling of thousands of orders. This cage, although small enough to go for one cent postage, is large enough to deliver queens alive to nearly all parts of the U. S.

Long-distance Benton Cage.

For difficult and inaccessible points, and remote from railroad lines, as well as for islands bordering our coast, we use and recommend a ten-hole Benton—four of the holes, two at each end, being used for candy. This cage is about twice the size of the regular Benton, above, and requires a domestic postage of 2c. It is not made for introducing, and, from the nature of the case, a long-distance cage can not be so adapted.

Export Benton Cage.

For mailing across the oceans to distant countries we make a special long-distance cage having compartments for candy and one compartment for a small

chunk of sealed comb honey. We have found that, since using honey in connection with the candy, better results have been secured. This cage will always be furnished provisioned, as we find it not practicable for others of no experience to prepare the food, and honey for carrying, the bees alive for so long a time. The domestic postage on this, with queen and 40 attendants, will be 5 cts.

West's Queen-cell Protector.

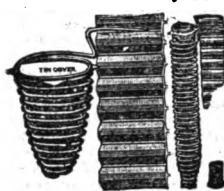


FIG. 117.

These are to prevent bees from gnawing into and tearing down cells given them at certain times of the year. When a choice cell with one of these is placed in the hive, it can be readily picked out from others that may have started up elsewhere in the hive. With them the apiary can be queened during the swarming season at a very little expense; and this, to a certain extent, will control swarming. Complete directions for use accompany each lot of cages. We also furnish spiral cages, to be slipped over these cell-protectors, as shown in the cut at the right. These are designed to hold the virgin queen, after she hatches, till she can be disposed of. We can still supply the wire Doolittle queen-cell protectors.

Miller's Queen-catcher and Introducing-cage.

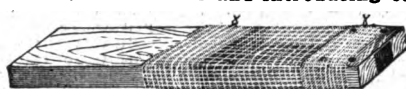


FIG. 118.

This is a very handy little thing to have in the apiary. Any one who is afraid to catch the queen by the wings can slip this cage right over her, and she will crawl up, and then the plug can be inserted. During swarming time it is very nice for catching clipped queens on the ground in the same way. It can be used advantageously, not only for introducing laying queens, but even virgin queens. Being only $\frac{1}{4}$ inch thick it can be slipped down between the combs, or slid in at the entrance, if you have not time to open the hive. In either case the bees will eat out the candy and liberate the queen in from 24 to 36 hours.

Price List of Queen-cages.

Name and description.	1	Price of		Wt. of 10.
		10	100	
Benton cage, complete with candy	5	\$ 40	\$ 3 50	8 oz.
Benton cage, comp. without candy	4	30	2 50	6 oz.
Benton-cage blocks bare.....	3	20	1 50	5 oz.
Benton-cage covers, printed.....	1	8	50	2 oz.
Miller introducing-cage.....	10	80	7 00	10 oz.
Long-distance Benton, complete without candy.....	5	45	4 00	10 oz.
Export Benton, complete with candy and honey.....	25	2 00	18 00	30 oz.
West's cell-protector	5	40	3 50	4 oz.
West's spiral cage.....	10	70	6 00	6 oz.
Doolittle cell-protector.....	3	15	1 20	2 oz.

Postage 1 cent for each ounce in weight and 1 cent extra on each package. Benton cage-covers are printed both sides. Your name and address will be printed in place of ours for 25c per 100, or \$1.00 per 1000 extra over prices above.

Wire Cloth.

Price 1½c per sq. ft. in full rolls. Less than a full roll, 1½c per ft. By mail, 2c per ft. extra.

Ordinary green window-screen wire cloth is used for making bee-cages, queen-cages, covering hives for shipping bees, putting over windows to honey-house, and a variety of purposes. As we buy in very large lots, direct from the manufacturers, we are able to make better prices than you will usually get at your hardware store. We have it in rolls 50 and 100 feet long, and in the following widths. 24, 26, 28, 30, 32, 34, 36, 38, 40, and 42 inches wide.

Queen-register Cards.

Price 5c for 10, 40c per 100.

These are stiff cards about 2½x4½ inches, to be attached to the hive for keeping record in rearing queens. There are three circles, one giving the days of the month, another the months of the year, and another the different conditions to be indicated.

BEE-BOOKS.



The ABC of Bee Culture. Probably no bee-book in the world, in any language, has had such an enormous sale as this one. Already over 62,000 copies have come from the press; and the present sales indicate that another large edition will have to be printed very soon. When the work was first issued, some 20 years ago, it contained only about 200 pages; but so fast was the growth of the industry, and so important the late improvements, and so great the demand for the work itself, it seemed necessary to greatly enlarge each edition,

and at the same time to change much of the old matter. These changes were easily made, from the fact that the whole book is kept in standing type. The work has grown so that it now numbers 475 octavo pages, and contains something like 400 engravings, many of them full-page, and executed at a large cost.

As the title indicates, it was written primarily for the beginner, and covers exhaustively every subject necessary for the successful management of bees, and at the same time contains hints and plans valuable to the advanced bee-keeper. Indeed, we intend to make this work, without regard to cost, the exponent of the very latest on the subject of bee-keeping.

For convenience and ready reference the subject-matter has been arranged on the plan of a cyclopedia; and bold headlines on every page, together with a very full index in the back part of the book, make it possible for any one to find just the information he desires.

After the twenty pages of introductory, there are 340 pages devoted to a general treatment of the subject of apiculture. Following this, and continuing for 8 pages, is a series of answers to as many knotty questions that are propounded by beginners. Next is a glossary of 3 pages, defining the terms peculiar to bee-keeping. Then for 11 pages more there are reviews and comments by two eminent bee-keepers—G. M. Doolittle and Dr. C. C. Miller, on the general subject-matter contained in the body of the book. This is indeed an interesting and valuable feature. The remaining portion of the book is taken up with biographical sketches occupying 67 pages, and a picture-gallery containing pictures, with a short description, of some of the most important apiaries of the world. Last of all is the index, comprising 8 pages. The price of the book is only \$1.20 postpaid, substantially bound in cloth and gilt; or \$1.00 with other goods; or to new subscribers, clubbed with GLEANINGS IN BEE CULTURE, \$1.75 postpaid. Renewals clubbed at \$2.00.

Langstroth on the Honey-bee. Revised by Dadant & Son. The original work, by the father of American bee-keeping, was a most valuable one in its time. The revisers have brought it up to the present advanced stage of bee-keeping, and have greatly increased its value as a reliable source of information on all subjects relating to the honey-bee. They are practical men, and no better authority could have been selected for the revision. The work has been accepted as a standard in Europe and America. In fact, it has been translated into the Russian and French languages. We can furnish the French edition at \$1.50 postpaid, \$1.35 not prepaid. The book contains nearly 600 pages, 16 large plates, and 200 other illustrations. Price \$1.25 postpaid. By freight or express, 15 cts. less.

Manual of the Apiary. By the well-known writer Prof. A. J. Cook. This work treats of both the scientific and practical part of bees. It covers a wide field in the range of apicultural matters—many of the subjects not being compassed elsewhere in any one work. The author, besides giving his own opinions, cites the opinions of many of our greatest writers on apiculture. It contains 460 pages and 222 illustrations. Price \$1.25 postpaid; 10 cts. less by freight or express.

Quinby's New Bee-keeping. This was originally written by Moses Quinby; and this, together with Mr. Langstroth's work, first placed American bee-keeping upon a paying basis. More recently, Mr. Quinby's son-in-law, L. C. Root, revised and thoroughly re-wrote the book, bringing it up within the present time. Mr. Root, like his father-in-law, made bees pay; and both are practical in their writings. Price \$1.50; by freight or express, 10 cts. less.

Dzierzon Theory. This is a book of 50 pages about half the size of this, by the Baron von Berlepsch. It is one of the most interesting books that were ever written, and one, too, that will never get out of date. The theories, for such they were when first propounded by that prince of bee-keepers in Germany, Dzier-

zon, are now virtually accepted as axioms by all the best bee-keepers of the country. Indeed, they form the very foundation of all our scientific and much of our practical knowledge on bees. Price, in tinted paper covers, only 10 cts.

Bees and Honey. By T. G. Newman, formerly the editor of the *American Bee Journal*. This is a 16mo in cloth and gilt, about 200 pages, fully illustrated. Its chief value is the part relating to the marketing and use of honey. Price 75 cts. postpaid.

Queen-rearing. By G. M. Doolittle. Any thing from the pen of this writer is sure to be reliable. This contains much valuable information on the subject which gives the book its name. It contains 177 pages and 22 illustrations, bound in cloth. Price \$1.00 5 cts. less not mailed.

Advanced Bee Culture. By W. Z. Hutchinson. This is a splendid work, especially for the advanced bee-keeper. Price 50 cts.

Amateur Bee-keeper is the title of an excellent little work on bees, especially adapted, as its name indicates, for the beginner, by J. W. Rouse. It contains 60 pages, and is neatly bound in paper. Price 25 cts.

BOOKS ON RURAL SUBJECTS.

Rural industries are so closely connected with bee-keeping that we do not think it out of place to include here a few rural books of our publication.

Merrybanks and His Neighbor. By A. I. Root. This is the title of a little book of 210 pages and 68 illustrations. It narrates the alternate failure and success of a beginner who ultimately, through much tribulation, becomes a successful bee-man and a power for good in Onionville. Appropriate original cuts, many of them humorous, are interspersed here and there, representing some of the droll experiences which a beginner with bees sometimes passes through. Besides bees, it talks of other rural pursuits, such as gardening, maple-sugar making, etc. Price 15c; 3 cts. less when sent with other goods by freight or express.

What to Do, and How to be Happy While Doing It. The above book, by A. I. Root, is a compilation of papers published in GLEANINGS IN BEE CULTURE in 1888, '7, and '8. It is intended to solve the problem of finding occupation for those scattered over our land out of employment. The suggestions are principally about finding employment around your own homes. The book is mainly upon market-gardening, fruit culture, poultry-raising, etc. Price in paper covers, 50c; cloth, 75c. If ordered by freight or express, deduct 8 and 10 cts. respectively.



ABC of Carp Culture. In paper covers, illustrated. This is a work of 70 pages 7x10, written by Geo. Finley and A. I. Root, and the best authority on the subject of carp culture yet in print. The rearing of carp is a pleasant and profitable amusement. This book will tell you all about it. Price 25c; by mail, 5 cts. extra.

ABC of Potato Culture. This is T. B. Terry's first and most masterly work. The book has had a large sale, and has been re-printed in foreign languages. It was revised and re-written in 1893, and the new edition makes 220 pages, half the size of this, fully illustrated, and bound in leatherette cover printed in gold. Price 35c; by mail, 40c.



Winter Care of Horses and Cattle. This is friend Terry's second book in regard to farm matters; but it is so intimately connected with his potato book that it reads almost like a sequel to it. If you have only a horse or a cow it will surely pay you to invest in the book. It has 44 pages, and 4 cuts. Price 25c; by mail, 30c.

The ABC of Strawberry Culture. 150 pages, fully illustrated. Price 35c; by mail, 5c extra. This is also one of Terry's, and has received some very high words of praise. Who that keeps bees does not also have a little garden patch? If you would learn to raise in it that most luscious of all fruits, the strawberry, with the best results, you can not be without this little book. Even if you don't grow strawberries you will be the better for reading it. Pages one-half size of this.





Maple Sugar and the Sugar-bush.
By A. J. Cook. Price 25c; by mail, 30c. This is by the same author as the Manual of the Apiary, and is most valuable to all who are interested in the product of our sugar maples. No one who makes maple sugar or syrup should be without it; 44 pages, fully illustrated.

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COMB-FOUNDATION MACHINES.

We make four sizes of these machines, as in price list below. The 6-inch mills are made especially for thin and extra-thin foundation, with hexagonal cell, unless otherwise ordered.

The 10-inch mills we send out, when no specification is given in regard to the style of cell, will make brood foundation from 6 to 8 sq. ft. per lb.; or, if wax is dipped thin enough, you can make fair surplus foundation on the same mill, about 9 to 10 sq. ft. per lb.; 12 and 14 inch machines are made with cells for medium brood foundation, about 5 to 6 square feet per lb., unless otherwise specified.

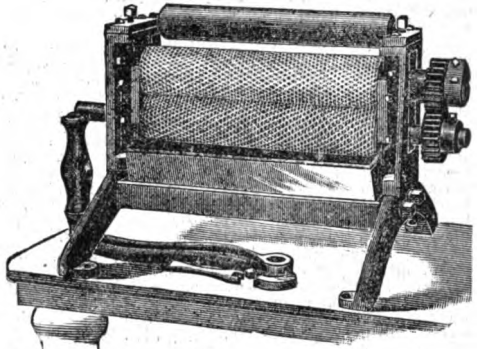


FIG. 57.—10-inch Foundation-machine.

The style of cell we prefer, and the one we furnish on all 10, 12, and 14 inch mills sent out on all orders except those from Europe, where no preference is stated, is what we call the round cell. This makes strong comb, and comes from the rolls more readily, I think, than the hexagonal cell. The latter, being the more natural form of the cell, is preferred by some. We will, therefore, furnish them either way, as you order. But if nothing is said specifying the style of cell, we send the round. We will mail free a sample package of foundation showing the different styles and weight. We can make the cell deep or shallow as desired; but remember the deeper the cell the more wax it takes for a square foot of comb, and the more difficult to take from the rolls. Mills to make extra deep cells turning out sheets of foundation about $\frac{1}{4}$ inch thick, will be made to order when wanted.

It is not practical to roll foundation much wider than 5 inches on a 6-inch mill, or 9 inches on a 10-inch mill, etc. The closer you work to the end of the roll, the more particular you have to be.

We especially recommend the 10-inch mill for the Langstroth frame.

Price List.

14-in. mill (boxed 115 lbs.),	\$42.00;	dipping-tank,	\$2.00
12-in. mill " 95 "	36.00;	" "	2.00
10-in. mill " 65 "	24.00;	" "	1.50
6-in. mill " 45 "	18.00;	" "	1.50

The above prices are for cells five to the inch. We are prepared to furnish mills with $\frac{1}{2}$ cells to the inch at ten per cent extra, but can not recommend them. The machines are all ready for use, and full instructions will be sent to each purchaser.

We have sold our machines not only all over the U. S., but in every civilized country on the globe, and we can give references in regard to them from all these countries.

We will furnish dipping-plates for the above machines, made from clear straight-grained pine, of any width, for 2½ cents per inch in width. Or if you choose you can make your own dipping-boards, as we always send along with the mills directions for making them. For the 10-inch mill a 9-inch board is used. For 1, frame you trim after rolling. For 1-lb. sections, trim to 8½ inches wide before rolling.

Unless you have to use or supply two or three hundred pounds of foundation each season, and have or can get the wax at a reasonable price, we do not advise you to purchase a machine. Many who use 1000 lbs. or more prefer to buy the foundation already made, especially as that made by the Weed New Process is so much superior.

How to Italianize an Apiary.

There are several ways this can be done: First, by buying tested queens for every one of the colonies containing black or hybrid queens. The old queens should, of course, be removed, and the hive left queenless for a couple of days before the new mothers are introduced. This method, although the surest, is rather expensive.

A cheaper way, and the one we would generally recommend, is to buy untested Italian queens after the honey season, or when the price is the lowest—say during August, September, and October; see table. Nine-tenths of the untested we send out will prove to be purely mated; and then, if the beginner loses his queen in introducing, the loss of an untested is only half that of a tested.

Still another way (and it implies a knowledge of queen-rearing) is to purchase three or four select tested queens; introduce them to some good stocks, and then from these raise virgin queens. In order that these queens may stand a fair chance of being fertilized by pure Italian drones, their colonies should be given drone comb, and as many Italian drones should be reared as possible. In the mean time, perforated zinc in the shape of Alvey drone-traps or, perhaps better, entrance-guards, illustrated on page 11, should be attached to the entrances of all colonies having impure drones. If you have very many colonies, use entrance-guards, as the traps are too expensive. Then, while the choice virgin queens are being mated, there should be nothing but Italian drones allowed to fly, as the others will be shut up or trapped. Of course, there may be black drones in the air, from your neighbors' bees, or from bees in the woods. If possible, get your neighbor to allow you to put perforated zinc, or entrance-guards, on the entrances of his hives, for a few days while your queens are being fertilized. The percentage of drones that may be from the bee-trees will be very small, and your virgin queens will stand a good chance of meeting pure Italian drones. If you do not know how to rear queens, we would by all means advise you to get some good text-book; for instance, the A B C of Bee Culture. By investing \$1.20 in this you may save yourself hundreds of dollars in blundering experience. For particulars see BEE-BOOKS.

How to Make a Start in Bees.

We advise you to buy black or brown bees in your own vicinity. Bees may be purchased in box hives, anywhere from three to five dollars per colony. They should then be transferred, as per directions given below. To give you an idea of the necessary outfit, we have given on another page a list of the supplies needed. After you have gotten the hives in the flat, nail them up, put in the foundation, and then you are ready to transfer the bees. When they are nicely going on their new set of combs, you can then, if you prefer, Italianize them. From one colony, by good management, you can increase, by dividing, to 4 or 5 during the season. For directions, see Artificial Swarming, and Dividing, in the A B C of Bee Culture; cloth, \$1.20. For particulars see BEE-BOOKS. Such a start can be made very cheaply, and at the same time give you valuable experience in the care and management of bees.

How to Transfer from Box Hives to Dovetailed Hives.

The old-fashioned way was, to pry off the side of the box hive, cut out the combs, and fit them, after a fashion, into the brood-frames. But this takes a great deal of time, and at best it is a sticky, mussy job, to say nothing of the mashed-up bees and stings, and finally the result is a lot of patched-up, crooked combs. The combs in box hives are usually so crooked, so old, and contain so many drone-cells, that it will be money in pocket to purchase brood foundation, fasten it into frames on wires ready to receive the transferred colony. See WIRING, and FASTENING FOUNDATION, elsewhere.

We will assume that your hive or hives, having been received in the flat, are put together and painted, and contain frames of wired foundation ready for the bees. Light your smoker and put on your bee-veil. Move the old hive back four or five feet, and put the new hive in its place. Prepare a small box about 8 inches deep and one side open, that will just cover (not slip over) the bottom of the box hive. Turn it upside down; set the hiving-box over it, and then drum on the sides of the hive with a couple of sticks until about two-thirds of the bees pass up into the box. Gently lift off the box containing the bees, and dump it in front of the entrance of the new hive. Make sure that the queen is among them, by watching

for her as she passes with the rest into the entrance. If you do not discover her, look inside the hive. If you still fail to find her, drum out bees from the old hive again until you do get her, for, to make the plan a success, she must be in the new hive.

Return to the box hive and turn it right side up and set it down a couple of feet back of the new one, with its entrance turned at right angles. You now have in the hive about one-third of the original colony, the combs, and all the brood. Allow the old hive to stand for at least 21 days, at the end of which time the brood will be hatched out, with the exception of a little drone brood which will be of no value. Turn the hive upside down, and drum the bees out again into the hiving-box, after which dump it in front of the entrance of the new hive, as before. Your job of transferring is now completed, and all you have on hand is an old box hive containing a lot of old crooked combs, with perhaps a little honey and drone brood in it. The honey can be extracted, or used as chunk honey on the table, if fit for use. The rest can be melted up into wax, and the hive itself will make first-class kindling-wood, because it is smeared over on the inside with propolis and bits of wax.

The method above described is what is known as Heddon's short way. As it is neater, quicker, and, we may say, cheaper, and certainly more satisfactory in its results, we recommend it in preference to the old way. For fuller particulars see A B C of Bee Culture, under BEE-BOOKS.

How to Prevent or Control Swarming.

It is not possible to control swarming entirely, except by caging the queen, which we will presently describe. A good deal can be done to discourage swarming by having the hives properly shaded. If the hives stand out in the open, away from trees or vines, with ventilated covers should be used or else shade-boards. These latter are made of any thin stuff, cleated at the ends, and placed over the top of the hive. But a far better plan is to put the hives on the north side of a shade-tree, bush, or vine of some sort; and then, if the bees begin to cluster out in front of the entrance during extremely hot weather, raise the hive up from its bottom-board about an inch. The simplest way is to wedge the hive up in front so that there will be at least an inch space between the hive and the bottom-board. If you are using the new-style reversible Danzy bottom-board, then be sure to use it with the deep side next to the hive. The main thing is to keep the bees from clustering out; and this can be done to a very great extent provided the hive is shaded and the entrance is large enough and provided with plenty of ventilation. If the bees are allowed to hang out and loaf they are liable to swarm. Another important requisite is to make sure at all times that the bees have plenty of room. Do not allow them to be crowded at any time, especially at the beginning of the honey harvest.

PREVENTION BY CAGING THE QUEEN.

In the production of comb honey there is only one reliable method, and that means so much work that the majority of bee-keepers do not practice it. Cage the queen of each colony over the brood-nest at the approach of the swarming season, and then in eight days cut out the queen-cells, and in eight days cut the cells again; but if you haven't a large apiary, and you have spare time nights and mornings, the labor will not figure much. The cutting-out of the cells alone or giving plenty of surplus room will help greatly to discourage, if not prevent swarming altogether.

THE CLIPPED-WING PLAN, OR THE EASIEST WAY OF MANAGING SWARMING.

But most apiarists think it an advantage to let the bees swarm once; and as all their queens' wings are clipped, when the swarm comes forth the queen is caught in a Miller queen-catcher cage (see another page), as she is crawling around in front of the entrance. The old hive is then removed to a new stand, and an empty one (several such should be kept in readiness) put in its place, when the queen is put in front of the entrance caged. The bees, on discovering the absence of the queen, will soon return pell-mell to the old stand. The surplus-chamber, if there was one on the old hive, is put on the new one now on the old stand.

This manner of catching the swarms is so little labor that the "women-folks" do not object to it since there is no handling of the swarm itself, no climbing of trees after it, and it is all done, practically, by catching the queen. The empty hive is easily handled, and the old hive need be moved but a few feet, when you will take care of it when you get home. You will also need to release the queen.

THE ENTRANCE-GUARD PLAN.

In place of clipping the queen's wings, many apiarists prefer the entrance-guards (shown on another page), one of which is attached at every entrance. The queen can not, of course, pass the perforated zinc, and there is, in consequence, no danger of her getting lost in the grass. Then if the women-folks *won't* go near, the bees will go back to the old hive; but you may be sure they will try it over again unless you give them a new hive full of empty combs or frames of foundation. They will then go to work, and probably give it up for the rest of the season. This plan has the advantage that every thing will take care of itself till you get home, and there is no danger, either, that you will lose any swarms.

THE ALLEY TRAP.

This goes one step further, and catches the queen in a compartment by herself. The whole trap may then be detached, and the queen liberated in a new hive of combs on the old stand, carrying out the plan outlined under the "clipped-queen" plan above.

PREVENTION OF SWARMING WHEN RUNNING FOR EXTRACTED HONEY.

This is far easier to accomplish. Give the queen unlimited room for egg-laying, and, if necessary, put on another eight-frame body. From the lower story draw out a couple of combs and put them above, filling out the space in both stories with empty combs or frames of foundation. Extract from both stories as often as need be, or put on a third story of empty comb or foundation. The main thing seems to be to give the queen and bees an abundance of room. You may ask why you could not do this for comb honey. Before the bees go into the sections they will fill the combs next to the brood with honey; and if the season should be short you would get no honey in the sections. But in extracting you can take from the bees just as much as, in your judgment, the bees can spare. The subject is treated far more fully in our A B C of Bee Culture. Price, in cloth, \$1.20—see BEE-BOOKS.

How to Produce Comb Honey with Dovetailed Hives.

The first important requisite is early brood-rearing, so that there may be a large force of bees at the right age for gathering honey as soon as the harvest opens. The hive should be crammed full of brood a month or six weeks before the harvest, and to secure this it may be necessary to practice stimulative feeding as described elsewhere, even though there is honey in the hive. In addition it would be well to put on winter cases if the hives are single-walled; for early in the spring, especially in the North, the brood-nest needs protection. As soon as the regular honey season is fairly begun, and the bees whiten the upper edges of the combs, and before they begin to be cramped for room, place on a super filled with sections; if the sections contain full sheets of foundation it will be better.

If the bees refuse to go up into the boxes, remove one or two sections from the center and put in place of them one or two containing drawn-out comb partly filled with honey. These may be gotten from some other colony already at work or from a store held over from the preceding season. A few of such sections should always be saved over. If the bees still refuse to go to work, either the working force is too small or there is little or no honey in the fields.

When they have filled the super about half full, raise it up and put another empty one under it; but do not do so if there is a prospect of the honey being cut off within a week or ten days, otherwise you will be liable to have a lot of unfinished sections on your hands, to be sold at a reduced price.

As the season slackens up there should be only one super on the hive, and in order to get all the sections completed it will probably be necessary to alternate the section-holders; i. e., change the center ones to the outside, and the outside to the center, because the bees usually work better in the center than at the outside. By alternating, the bees will probably fill and complete all the sections at a time. This is the peculiar feature of the section-holder arrangement.

As soon as the combs are capped over, they should be taken from the hive. To get the bees out of the sections, smoke down between them, take the super off and shake it vigorously. Smoke and shake again till all or nearly all the bees are out. A better way is to use the bee-escape shown elsewhere. This is placed on the night before, and there will generally be few if any bees there the next morning. For further particulars on how to produce comb honey see the A B C of Bee Culture, 400 pages, written especially for beginners. Price, in cloth, \$1.20. See BEE-BOOKS.

How to Produce Extracted Honey.

There should be a large force of bees secured by early brood-rearing, as in the case with comb honey. As soon as honey begins to come in, and bees commence to be a little crowded, place a hive-body or extracting-super, containing a full set of drawn-out combs, on top, with a perforated-zinc honey-board between them. If you haven't the combs, give frames containing full sheets of foundation. If nectar is coming in slowly, put on only half as many combs, with a division-board up close to it; or if you are using shallow extracting-supers, give only one super at a time. As the combs begin to be filled with honey, if the honey-flow continues lift the super containing them and put on another one with empty combs, between it and the brood-nest. The combs should be pretty well sealed before extracting.

If you haven't time to extract as soon as the combs are capped over, leave them in the hive, giving the bees empty combs below as fast as needed. At the end of the season, or when you have time, extract. The longer the honey remains on the hives up to two or three months, the richer it will become.

To get the bees off the combs use the Cogshall bee-brush, as it is far better for the purpose than any other brush we know of; but it is better to dispense with the brushing of combs altogether when practicable, and use instead the bee-escape. See BEE-ESCAPE.

To uncup, use an Abbott or Bingham honey-knife, occasionally dipping it in hot water. Save the honey that drains from the cappings, because this is the very best. For this purpose we know of nothing better than the Dadant uncapping-can. When ready to extract, the extractor should be screwed down to a bench just high enough so that the honey-gate will come over a receptacle or a pipe leading to one where the honey may be further evaporated. To get at the extractor conveniently, it may be necessary to stand on a box so that the crank can be operated easily, as well as to facilitate the removal of the combs from the extractor. If your combs are unwired, you should by all means have a reversible extractor. With this you can extract from one side partly, and then reverse the combs; throw out all the honey on that side, and then return to the first side, and finish. This will prevent breaking down the combs. We advise all those who do very much extracting, not only to have all their combs wired, but to have a reversible extractor. It doesn't pay to waste time with the non-reversing machines and unwired combs when much honey is to be thrown out. Fuller particulars on this subject are given in our A B C of Bee Culture. Price in cloth, 400 pages, \$1.20. See BEE-BOOKS.

Wintering.

A good deal depends upon locality as to when preparations should be made.

If, at the close of the summer, your bees are short of stores, and have no prospect of a fall flow of nectar, the earlier they are fed up the better. Colonies may be fed late in the fall, or just before actual cold weather comes on, but it is not advisable. If you have been careless and have put it off till late, use the Miller feeder, or percolator crocks, described under FEEDERS.

WINTERING IN SINGLE-WALLED HIVES.

Single-walled hives, as, for instance, the Dovetailed, are cheaper and handier in many ways, and hence the majority to whom these hints are addressed are obliged to winter in them. South of parallel 35, or even 40 in some localities, these hives will winter bees outdoors very well with but little protection. They should be sheltered, of course, from the prevailing winds, and the two outside frames (most colonies will spare them) should be removed, and a chaff-packed division-board substituted. A half-story, or super filled with chaff, should then be put on top, with a Hill device placed below. In the extreme Southern, or Gulf States, no additional protection is needed, and the only thing to guard against is actual starvation.

North of parallel 40, single-walled hives should either be put in our Dovetailed outside winter case, as shown on page 7, or carried into a cellar, or other repository proof against freezing. Colonies in such hives, if strong enough, may be wintered outdoors without the outside cases, but usually it is at a considerable loss of vitality. In fact, a whole apiary, if the winter should be mild, will live through; but sad experience has shown repeatedly that it is best to prepare for a cold winter. Nothing is so discouraging to beginners, and so disastrous to bee-keeping, as to lose, during the winter, half or two-thirds of the colonies, with the rest weak, and hardly fit to be called colonies. Put them in winter cases, or lift the frames out of the

single-walled hives, and put them in double-walled or chaff hives; or, what will be cheaper and more convenient to most bee-keepers, carry them into the cellar.

HOW TO WINTER IN THE CELLAR.

A good dry cellar, into which frost never penetrates, is essential; and, if possible, that part which is used for vegetables should be partitioned off from the part occupied by bees. The windows, while they should permit of easy opening to let in fresh air, should also be so screened as to shut out all rays of light. The cellar should be absolutely dark, to keep the bees from flying out and dying on the floor. As to size, 10x10x7 feet (or equivalent capacity) will be about right for 75 colonies, although 100 or even more may be accommodated, provided the apiarist is skilled enough to give the requisite amount of ventilation (not too much) and to maintain the proper temperature, 45 degrees.

Before putting the bees in the cellar, lay 2x4 scantling parallel, and about 8 inches apart, on the cellar bottom next to the wall. Then some cool day (in our locality about the first of December), when bees can not fly, or when the clusters have contracted off the bottom-boards, carry the bees into the cellar, bottom-board and all. We use what we call our hive-carriers, the same as shown in the accompanying cut. They are simply bails with sharpened hooks to catch under the bottom-board as shown. Price 25 cts. per pair. They save a great deal of hard stooping, and make the carrying of hives to cellar a comparatively easy matter. To pick the hive up by the hand-holes, the bottom is liable to drop off; but the carrier picks the hives up by the bottom.



FIG. 129.

Place the first hive near one corner of the cellar; lift it off its bottom-board by the hand-holes, and set the bottomless hive across the scantlings. With the carriers bring in another hive (two can work to better advantage—see cut); lift it off its bottom as before, and set it on the scantlings beside the first one, with about 5 inches of space between. Place the third hive beside the second with the same distance intervening, and continue thus with the others until the bottom row is completed. We always aim to bring in the heaviest hives first, so as not to be obliged to lift them clear to the top of the pile. We next begin the second tier, the first hive of which is set directly over the 5-inch space between the first two put into the cellar. In this way the hives are to be piled, one upon two others, thus:

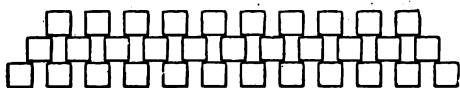


FIG. 130.

If you are using the latest Dovetailed hive with Danzy bottom-board, which provides a deep space under the frames and a large deep entrance, then we would advise you to leave the bottom-boards on the hives. In that case the hives may be piled about an inch apart instead of 5 inches, as above recommended. The dead bees will accumulate on the bottom-boards, instead of dropping down on the hives below and littering things up generally. If the dead bees accumulate too thick on the bottom-board they can be easily raked out on to a shovel or dustpan.

The manner of carrying bees out in the spring is simply to set a hive on one of the bottom-boards, and, with carriers, place it outdoors. It is better to protect them for a while with the winter cases, shown on another page. It does not matter much if the hives don't go back where they were the previous fall. The bees will readily adapt themselves to their new location after the long winter sleep. During the winter keep the temperature as nearly even as possible. Some prefer 40 and others 45 degrees. Toward spring, or when the weather warms up outside, the bees may get a little restless. Open the cellar windows at night, or it may be advisable to leave them open a little all the time. During very cold weather you will have no trouble, except to prevent the temperature from going too low. You are then to shut the windows up tight. Don't be alarmed toward spring if dead bees accumulate on the cellar bottom. They are

simply the old bees that are diseased, or; what is more probably true, bees that have died from old age. If they accumulate too much, sweep them up and carry them out.

HOW TO WINTER IN DOUBLE-WALLED OR CHAFF HIVES.

Outdoor wintering is simpler than the indoor. It requires less skill, and the beginner will more likely have success. Our chaff hives have everywhere given uniformly good results; and, no matter whether the winter be mild or bitter cold, they "get there just the same." The method of procedure is simply to contract the brood-nest to as many frames as the bees will cover comfortably, and insert a division-board. Lay a Hill device over the center of the frames; spread the burlap sheet over (any porous material will do), and over it the cushion, or, better, the tray mentioned under CHAFF HIVES. If the bees have 25 lbs. of sealed stores they do not need to be touched again till toward the following spring. We wouldn't give two cents to have them insured.

CAUTION.

In conclusion, don't "put off" preparations for winter. Commence early in the fall to feed; and, if outdoors, the sooner they are packed the better. There is nothing lost in being a little early, and a good deal may be lost by being a little too late. For further particulars on this subject we would refer you to the A B C of Bee Culture, a cyclopedia of over 400 pp. See table of prices under BEE-BOOKS.

Foul Brood—Its Treatment and Cure.

SYMPTOMS.

Some of the brood fails to hatch. Cappings here and there are sunken and perforated at the center. On opening one of these cells there will be found a dead larva lying on one side of the cell, somewhat shrunken, and of a brownish color, varying all the way from a light pale brown to a dark brown. In the more advanced stages the brown is of the color of a coffee-berry after being roasted. In the incipient stages the brown is of a color of the coffee we drink, when greatly diluted with milk. But so far all these symptoms may be present as the result of chilled, overheated, or starved brood. But to determine whether it is the real foul brood, run a toothpick into the dead larva and then slowly draw it out. If the matured mess adheres to the end of the pick, about like spittle, and finally the fine thread breaks when the pick is drawn back it is probably a case of foul brood. With all other forms of dead brood, with perhaps one exception, this ropiness does not appear; but with foul brood it invariably appears. Now, there is another symptom; and that is, the odor, while not exactly foul, resembles greatly that from a cabinet-maker's glue-pot; and when the disease is pretty well advanced in the hive, the odor will make itself manifest upon lifting the cover or quilt, even before exposing the brood. If other colonies are affected in a similar way, and the disease appears to spread, it is unquestionably a case of foul brood.

TREATMENT.

Prepare a clean hive containing only frames of foundation. Toward night shake all the bees from the diseased or suspected colony on to frames of foundation, and place the new hive on the stand of the old one. If possible, the new hive should resemble exactly the old one; otherwise the bees will be confused, and carry the germs of the disease to other colonies. Compel the bees to use up the honey in their honey-sacs in drawing out the foundation. Don't feed for a day or so.

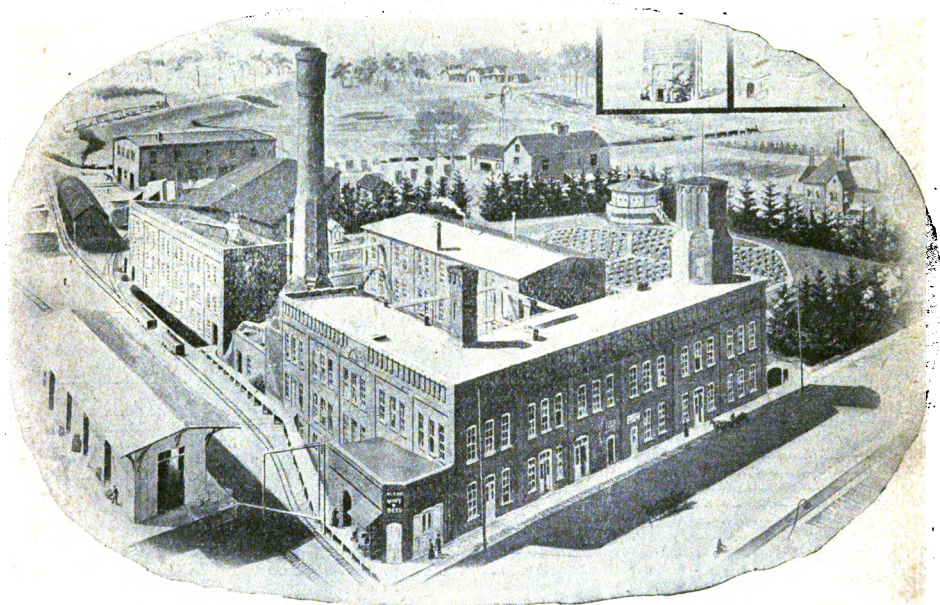
The diseased honey in the honey-sacs will be converted into wax, and the new product will be entirely harmless. The old combs of the hives should be burned. Do not economize by melting up the wax. You will not get enough to pay, and will run the risk of spreading the disease all over the apiary. The old hives should be immersed in boiling water for at least 15 or 20 seconds. Splashing boiling water on it will hardly be sufficient. Painting the inside of the hive with a strong solution of carbolic acid may answer; but we know that boiling the hives is effectual. The hive, after boiling, may be used again with perfect impunity, with a new colony. If not feasible to immerse chaff hives in boiling water, smear the inside of the hive with kerosene. Set fire to it and let it blaze until the oil is consumed, and the wood just begins to blacken. Just at that point throw in a thimbleful or two of water, and clap the cover on immediately. The steam generated by the water coming in contact with the flame, and confined, will extinguish the fire. Hives so disinfected have been tried, and found to be free from further taint of the disease.

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Catalogs of Other Goods.

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